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Manual  
*of*  
The State High School Board  
of North Dakota



August, 1911



A MANUAL FOR THE USE  
OF THE  
STATE HIGH SCHOOLS  
OF NORTH DAKOTA

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*North Dakota.*  
*Published by the High School Board*

AUGUST, 1911

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## PREFACE

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This manual is published for the use of school officers, superintendents, principals and teachers. Its purpose is to state conditions of classification, rules governing examinations and courses of study, and to indicate briefly the amount and character of work required in each subject. This manual supersedes all other circulars and letters of instruction from the state high school board.

E. J. TAYLOR,  
*Secretary.*

Bismarck, August 1, 1911.



# MANUAL OF HIGH SCHOOL BOARD

## 1. STATUTORY PROVISIONS

[Revised Codes of 1905 as amended in 1907.]

### GENERAL LAWS, 1911, CHAPTER 267

§ 1. Section 1031 of the Revised Codes of 1905 is hereby revised to read as follows:

§ 1031. STATE HIGH SCHOOL BOARD. HOW COMPOSED AND DUTIES.—The superintendent of public instruction and the president of the state university, and the president of the North Dakota Agriculture College, ex-officio, one member to be chosen from among the superintendents of the city schools, in which are located high schools of first class and one member (male) who shall not be officially connected in any manner with the educational system of the state, shall be appointed by the governor as herein provided, and shall constitute and be called, “The State High School Board,” and shall perform the duties and have and exercise the powers hereinafter mentioned.

One of the members chosen from among the superintendents of the city schools of first-class, shall be appointed for a term of four years, and one member chosen from among the superintendents of city schools of first-class shall be appointed for a term of two years. The member of the board at large shall be appointed for a term of two years; thereafter, the members shall be appointed for a term of four years as provided by law in the case of other state boards.

§ 1032. SCHOOLS CLASSIFIED.—Any public graded school in any city or incorporated village or township, organized into a district, under the township or district system, which shall give instruction according to the terms and provisions of this article and shall admit pupils of either sex from any part of the state without charge for tuition, shall be entitled to be classified as a state high school, and to receive pecuniary aid as hereinafter specified; pro-

vided, however, that no such school shall be required to admit non-resident pupils unless they pass an examination in orthography, reading in English, penmanship, arithmetic, grammar, modern geography and the history of the United States.

§ 1033. REQUIREMENTS FOR CLASSIFICATION.—The said board shall require of the schools applying for such pecuniary aid or prerequisite to receiving such aid, compliance with the following conditions, to-wit:

1. That there be regular and orderly courses of study, embracing all the branches prescribed by the said board for the first two years of the high school course.

2. That the said school receiving pecuniary aid under this article shall at all times permit the said board of commissioners, or any of them, to visit and examine the classes pursuing the said preparatory courses.

§ 2. Section 1034 of the Revised Codes of 1905 is hereby revised to read as follows:

§ 1034. HIGH SCHOOL INSPECTOR. HOW APPOINTED. WHAT SCHOOLS TO RECEIVE STATE AID. APPROPRIATION.—The State High School Board shall appoint a high school inspector, whose term of office shall be two years, provided, that the inspector appointed in 1911 shall hold office for two years from July 1, 1911. The salary of the high school inspector shall be two thousand dollars per annum payable monthly, on warrant of the state auditor, from the general fund of the state. The high school inspector shall also receive his actual and necessary expenses incurred in the discharge of his official duties, which expenses shall be paid as provided by law out of the general fund of the state. He shall visit at least once a year, and carefully inspect the instruction, discipline and general condition of each high school of the state and make a written report on the same immediately; provided, that no money shall be paid in any case until after such report shall have been received and examined by the board and the work of the school approved by the board. The said board shall receive applications from such schools for aid as hereinafter provided, which applications shall be received and acted upon in order of their reception. The said board shall apportion to each of said schools, which shall have fully complied with the provisions of this article, and whose application shall have been approved by the board, the following sums, to-wit: Eight hundred dollars each year to each

school maintaining a four years' high school curriculum and doing four years' high school work. The sum of five hundred dollars each year to each school having a three years' high school curriculum and doing three years' high school work. The sum of three hundred dollars each year to each school having a two years' high school curriculum and doing two years' high school work; provided, that the moneys so appropriated to any high school shall be used to increase the efficiency of the high school work; provided, that not less than forty per cent of the money appropriated must be used in any one year for libraries, laboratories and other apparatus and equipment; provided, further, that the total amount of apportionment and expenses except the salary and expenses of the high school inspector, under this article shall not exceed forty-five thousand dollars in one year. The sum of forty-five thousand dollars is hereby appropriated annually for the purposes of this article, to be paid out of any moneys in the state treasury, not otherwise appropriated, which amount, or so much thereof as may be necessary, shall be paid upon the itemized vouchers of said board, duly certified and filed with the state auditor; provided, however, that in case the amount appropriated and available under this article for the payment of aid to such schools shall in any year be insufficient to apportion each of such schools as are entitled thereto, the full amount intended to be apportioned to the high schools of the various classes, then, in such case, such amount as is apportioned and available shall be apportioned pro rata among the schools entitled thereto.

§ 3. Section 1035 of the Revised Codes of 1905 is hereby revised to read as follows:

§ 1035. NO COMPENSATION FOR MEMBERS OF BOARD. EXPENSES. SALARY OF HIGH SCHOOL INSPECTOR. The members of the board shall serve without compensation, but the actual and necessary expenses of the board, salary and expenses of the clerk, of the examiner and of the readers of the high school board examination papers, shall be paid in the same manner as provided by law for other state officers.

§ 4. Section 1036 of the Revised Codes of 1905 is hereby revised to read as follows:

§ 1036. DISCRETIONARY POWERS.—The high school board shall have full discretionary power to consider and act upon applications of schools for state aid and to prescribe conditions upon which said

aid shall be granted, and it shall be its duty to accept and aid such schools only as will, in its opinion, if aided, efficiently perform the service contemplated by law. Provided, not more than five schools in any one county shall have the right to aid under the apportionment of the state high school fund until all other schools eligible under the provisions of this act shall have received their proportionate share of such high school aid. Any school once accepted and continuing to comply with the law and regulations of the board made in pursuance thereof shall be aided not less than three years. The board shall have power to establish any necessary and suitable rules and regulations relating to examinations, reports, acceptance and classification of schools, courses of study and other proceedings under this article.

§ 1037. **SHALL KEEP RECORD.**—The said board shall keep a record of all proceedings and shall make on or before the first day of December in each year a report, covering the previous school year, to the superintendent of public instruction, showing in detail all receipts and disbursements, the names and number of schools receiving aid, the number of pupils attending the classes in each, to which report they may add such recommendations as they may deem useful and proper.

#### GENERAL LAWS OF 1911, CHAPTER 40

AN ACT to provide for the establishment and maintenance of a Department of Agriculture, Manual Training and Domestic Economy in state, high, graded and consolidated schools.

BE IT ENACTED By the Legislative Assembly of The State of North Dakota:

§ 1. **SCHOOLS TO MAINTAIN DEPARTMENT OF AGRICULTURE.** How DESIGNATED.—Any state high school, graded or consolidated rural school having satisfactory rooms and equipment, and having shown itself fitted by location and otherwise to do agricultural work, may, upon application to the high school board be designated to maintain an agricultural department.

§ 2. **REQUIREMENTS.**—Each of such schools shall employ trained instructors in agriculture, manual training and domestic science, (including cooking and sewing,) and have connected therewith, so long as they shall enjoy the benefits of this act, a tract of land suitable for a school garden and purposes of demonstration, and containing not less than ten acres and located within one mile of school buildings.

§ 3. INSTRUCTION. TO BE OFFERED.—Instruction in the industrial department herein provided shall be free to residents of this state. Where necessary to accommodate a reasonable number of boys and girls able to attend only in the winter months special classes shall be formed for them. Said department shall offer instruction in soils, crops, fertilizers, drainage, farm machinery, farm buildings, breeds of live stock, stock judging, animal diseases and remedies, production, testing and hauling of milk and cream, the manufacture of butter and cheese, the growth of fruit and berries, management of orchards, market garden and vegetable crops, cereal grains, fine seeds, bookkeeping and farm accounts and all other matters pertaining to general practice.

§4. Each of said schools shall receive state aid in the sum of two thousand five hundred dollars and its proportionate share of all moneys appropriated by the national government for the teaching of elementary or secondary agriculture in the public or high schools of this state, but shall not participate in the state aid now being given to the state high schools. Not more than five schools shall be aided the first year nor more than five be added to the list every two years thereafter.

§ 5. APPROPRIATION.—For carrying out the provisions of this act there is hereby appropriated out of any moneys in the state treasury not otherwise appropriated: For the year ending June 30, 1912, the sum of \$12,500. For the year ending June 30, 1913, the sum of \$12,500.

Provided, that no more than one school in any county shall be added to the list of state schools receiving state aid under this act in any two years.

§ 6. EXTENSION TO RURAL SCHOOLS.—For the purpose of extending the teaching of agriculture, home economics and manual training to pupils in rural schools, and for the purpose of extending the influence and supervision of state high or graded schools over rural schools, one or more rural schools may become associated with any state high or graded school maintaining a department of agriculture, whether or not such high or graded school has been designated by the state high school board to receive aid under the provisions of this act. Any such high or graded school shall, for the purpose of this act, be known as a central school.

§ 7. How EFFECTED.—To effect this, proceedings shall be had by petition and election on the part of the rural school or schools

as now provided by law for the consolidation of school districts and ballots to vote upon this proposition shall read:

To associate with District No.----- for the teaching of agriculture and manual training.

Yes-----

No-----

The district or districts casting a majority vote upon the approval of such association by a majority of the school board of the central school become so associated and the rural school or schools together with the central school shall thereafter be known as the associated schools of----- for the teaching of agriculture and manual training.

§ 8. TAXES. HOW LEVIED.—The members of the various school boards of the associated schools shall meet on the third Monday in June of each year at the central school building to act as a board of review and to examine into the amount of money expended in each department of work herein provided for and to determine the amount of tax which shall be levied on the associated rural school district or districts for the purpose of maintaining courses of instruction as provided in Section 3 of this act and for the purpose of extending such instruction to the pupils of the associated rural schools. Provided, however, that the tax shall not be less than one mill nor more than four mills in the various rural school districts in the association and such tax shall be in addition to other general and special school taxes in such rural districts. The amount of such tax shall be certified by the chairman of the meeting to the county auditor to be by him extended against the property in the respective districts and when collected by the county treasurer, such tax shall be paid to the treasurer of the central school who shall furnish the board of review full and detailed statement of all moneys received and expended.

§ 9. CENTRAL BOARD. HOW ORGANIZED.—The school board of each rural district associated with a central school under the provisions of this act shall designate one of its members by vote to act with the school board of the central school in carrying out the provisions of this act as to the teaching of agriculture, domestic economy and manual training in such schools and in all matters pertaining to such instruction both in the central school and in the associated rural schools, such members shall have equal power with the member of the school board of the central school.

§ 10. DUTIES OF PRINCIPAL.—The principal or superintendent of the central school shall have and exercise the same authority and supervision over the rural schools as over the central school. He shall prepare for the associated rural schools a suitable course of study embodying training and instruction in agriculture and such subjects as are related to farm life and can be successfully taught in rural schools.

§ 11. How TERMINATED.—The relationship and obligations between the associated rural school or schools and the central school may be terminated at any annual school meeting by a majority vote of the associated districts, but not until the central school has had at least one year's notice of the intention to vote on the question.

Item—\$12,500 for year ending June 30, 1912, vetoed; others approved. March 18, 1911.

## PARTIAL VETO

BISMARCK, March 18, 1911.

*To the Honorable, the Secretary of State:*

I file herewith House Bill No. 29, an act to provide for the establishment and maintenance of a department of agriculture, manual training and domestic economy in state high, graded and consolidated schools, with my approval except as to the item \$12,500 for the year ending June 30, 1912. This item is vetoed for the reason that the revenues of the state have been exceeded by the appropriations.

JOHN BURKE,  
*Governor.*

## GENERAL LAWS 1911, CHAPTER 264

An act requiring a more thorough and comprehensive system of instruction in all common and high schools of this state, and providing a penalty for the violation therof.

Be It Enacted by the Legislative Assembly of the State of North Dakota:

§ 1. WRITING.—Each pupil in the common schools as they shall become sufficiently advanced to pursue the same, shall be required to devote at least fifteen minutes practice in writing each day during the school year.

§ 2. COURSE OF STUDY IN HIGH SCHOOLS, SELECTION BY PUPILS.—All pupils entering high school shall select one of the courses of study offered by said high school, and no pupil shall be permitted

to change said course of study, except by permission of the superintendent of said school, or upon request of the parents or guardian of said pupil.

§ 3. REVIEW BY SENIOR CLASS, DUTY OF SUPERINTENDENT.—The superintendent shall, and it is hereby made his duty to cause to be reviewed by each senior class during the second semester, the full and complete course of study pursued by said class in the grammar grades.

Approved March 6, 1911.

## II. RULES AND REGULATIONS

### A.—APPLICATION FOR CLASSIFICATION

1. Candidates for classification shall make application to the board, through its secretary, on or before June 1 of each year, on blanks furnished by the secretary upon application.
2. These applications shall be filed by the secretary and considered by the board in the order of their receipt. Each application shall be accompanied by a full report of the high school.
3. Any school failing to comply with the law, and regulations of the board, made in pursuance thereof, shall be removed from the list of classified schools and may be re-entered only upon renewal of its application.
4. Schools applying for classification after all funds appropriated for aiding high schools are exhausted may be classified as state high schools without aid and be entitled to the same privileges of examination and certificates as free state high schools receiving aid.

### B.—CONDITIONS OF ACCEPTANCE

1. There shall be a well organized elementary school with a course of instruction of such elementary school, corresponding substantially to the eight years' course prescribed by the department of public instruction for common and graded schools.
2. Third class high schools shall have not less than four rooms or departments and at least one laboratory and recitation room; second class schools shall have not less than five rooms or departments and two additional rooms for laboratory and recitation work; first class high schools shall have not less than five rooms or departments and a sufficient number of additional rooms for laboratory and recitation purposes, at least three.
3. The minimum number of teachers in third class high schools shall be five, which includes the principal and one assistant high school teacher; second class high schools seven, including the principal and two assistants in high school; and first class high schools eight, including the principal or superintendent and three assistants in high school,—two of these assistants must devote their entire time to high school work and the third may give a portion of her time to supervision of vocal music and freehand drawing in the elementary schools.

4. The work in all state high schools shall be of a high order.
5. Each state high school shall be provided with necessary recitation rooms, furniture, apparatus and library, to the end that the work of the schools shall be of the highest possible efficiency.
6. The school session shall consist of at least nine months, or thirty-six weeks, each year.

7. The superintendent shall be provided with an office and with sufficient assistance in high school and office to allow him one-fourth to all of his time in school hours for general supervision over the grades. In the office of the superintendent or principal there shall be kept on file circulars, pamphlets and correspondence pertaining to the school, records of equipment, records of library, of enrollment, of scholarship, of promotions, of alumni, etc.

8. All schools accepting high school aid shall be required to keep such funds separate from the general fund, and said high school aid shall be used only for the following purposes:

Forty per cent. or more for:

- (a.) Laboratory apparatus and supplies for all science work in the high school, including agriculture.
- (b.) Purchase of books for high school reference library.
- (c.) Equipment for manual training and domestic science and art in the high school.
- (d.) Equipment for commercial courses in the high school.

And the remainder, if any, shall be used in the payment of high school teachers' salaries.

The clerk of the school board of each school receiving aid shall submit to the high school board, not later than June 1st. of each year, a detailed statement of all expenditures during the year of money received from state aid for high schools. The state high school aid of the following year shall be withheld from any school the clerk of which fails to make satisfactory report of the disbursement of the aid last received on or before June 1st.

9. The high school board will classify no high school as first class in a district having an assessed valuation of less than \$250,000.
10. In high schools of the first class list and in all second and third class high schools having a four-year\* curriculum, the super-

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Any high school offering in the aggregate, whether by alternation of subjects or otherwise, fifteen (15) or more units of high school work and graduating or purposing to graduate pupils from the high school, shall be considered as having a four-year curriculum for the purposes of this ruling. See section four (4) under "D.—Conduct of Schools" in this Manual.

intendent, principal of the high school, and assistants in the high school department shall hold the B. A. or equivalent degree from an institution of recognized standards or shall hold the first grade professional certificate, granted under the provisions of section 252 of the school laws of 1911.

In first and second class high schools, teachers of music, drawing, commercial subjects, agriculture, manual training, domestic science and domestic art who do not hold the bachelor's or equivalent degree from an institution of recognized standards or the first grade professional certificate, granted under the provisions of section 252 of the school laws of 1911, shall hold special certificates to teach these subjects, granted under the provisions of section 253 of the school laws of 1911.

In second and third class high schools that do not offer a four-year curriculum, if the superintendent, principal, and assistants in the high school department have not the B. A. or equivalent degree from an institution of recognized standards or the first grade professional certificate, granted under the provisions of section 252 of the school laws of 1911, they shall hold the second grade professional certificate, granted under the provisions of section 251, or its equivalent, as provided for in section 254 of the school laws of 1911.

This ruling shall be effective on and after July 1, 1911; but shall not be retroactive.

10a. The large classes, or sections of classes, in a school should not contain more than thirty pupils. If classes are large, a teacher should not be required to take charge of more than five per day. If they are small, containing but four to ten pupils, a teacher may successfully conduct seven classes per day, depending somewhat on the subjects taught. One who teaches the subject of English should not be required to instruct more than one hundred pupils per day. One who teaches English I. or II. only should not instruct more than seventy-five pupils per day.

11. The high school board shall classify as first class no school paying less than \$1,200 a year to its principal or superintendent; as second class, no school paying less than \$1,000 to its principal; and as third class, no school paying less than \$900 to its principal; and

shall classify no high school of any grade which pays less than \$65 per month to the assistants in the high school.

The wages ordinarily paid to teachers are entirely inadequate, considering the service which a good teacher is expected to render and the preparation which that teacher must have to render that service; and although the high school board requires for purposes of classification the above minimum, it recommends that the salary of a superintendent of a first class high school be not less than \$1,500 per annum; of a second class high school, not less than \$1,200, and for a third class high school, not less than \$1,000; further, that no high school assistant should receive less than \$70 per month.

12. No school shall be classified by the high school board which has not an efficient heating and ventilating system, and proper sanitary conditions. Medical inspection of pupils is recommended.

C.—CLASSIFICATION OF SCHOOLS AND ADDITIONAL CONDITIONS  
OF ACCEPTANCE

All high schools accepted by the high school board shall be included in one of the following classes:

(a) High schools of the first class shall include all schools doing four years of work and which have complied with the following and other conditions:

1. They shall have not less than thirty well prepared pupils in average daily attendance and at least three assistant high school teachers, one of whom may be the supervisor of music and drawing in the grades.

2. The school shall have suitable and commodious quarters and shall have well established laboratory courses in *three* of the science courses named by the state high school board in the program of studies for high schools.

3. They shall afford instruction in all of the constants prescribed by the state high school board as per program of studies, p. 28.

4. They shall have an ample working library, including a sufficient supply of supplementary reading for each of the twelve grades.

5. In all first class high schools the subjects of music and drawing shall be taught under the supervision of a specialist or by a special instructor or by some teacher competent to supervise these subjects.

(b) The second class shall include those schools in which the

course extends at least thru three years as explained under Program of Studies for High Schools, page 28, and comply with the following and other conditions:

1. High schools of the second class shall have an average daily attendance of not less than twenty well prepared pupils and at least two assistant high school teachers, one of whom may be the supervisor of music and drawing in the elementary grades.

2. Ample laboratory appliances for instruction in either botany, zoology or agriculture, and in either physics or chemistry, for each pupil.

3. They shall afford instruction in three-fourths of the list of constants named in the program of studies, p. 28.

4. A selected historical and reference library for the work in history and English and the sciences taught, and supplementary reading for the grades of the elementary school in connection.

(c) The third class schools shall be those that afford instruction in eight of the fifteen units of prescribed work. They shall possess:

1. An average daily attendance of at least fifteen well prepared pupils, and one assistant high school instructor who may supervise music and drawing in the grades.

2. Ample laboratory appliances for instruction in either botany, zoology or agriculture and offer, at least one.

3. An ample working library and a sufficient supply of supplementary reading for each of the first ten grades.

(d) State high schools, having an agricultural department, besides meeting the requirements of a state high school, shall have:

1. Two special instructors, one in agriculture and manual training and one in domestic science and art.

2. Sufficient and well equipped rooms for the pursuit of these subjects; a room each for manual training, domestic science and agriculture.

3. Ten acres of land within one mile of the school building for use in experimentation.

#### D.—CONDUCT OF THE SCHOOL

1. All pupils before admission to the high school shall pass a satisfactory examination in reading, writing, spelling, geography, English language and grammar, United States history and arithmetic.

It is recommended that seventh and eighth grade pupils in ele-

mentary schools connected with state high schools take the high school board examinations for entrance to high school. In order to make stronger the articulation between the state high school system and the system of common schools of the state, it is recommended that the high schools accept for entrance, pupils from other elementary schools who have succeeded with the final examinations provided for in the Course of Study for the Common Schools of North Dakota.

2. All courses are to be pursued a year of at least thirty-six weeks except when otherwise specified. A course of study pursued a minimum of thirty-six weeks, five periods per week or equivalent, each period having a duration of forty minutes in the clear, counts as a unit.

The recitation period shall be forty minutes in the clear. There should be, at least, two eighty-minute laboratory periods per week for each subject requiring laboratory work and the daily program should be arranged to conform to these eighty-minute periods.

3. English I., English II., English III., Adv. U. S. history and civil government shall be constants for the pupil; i. e., no pupil shall graduate from one of the state high schools without having completed these subjects. High schools of the first class are required to do a minimum of fifteen (15) units of work; high schools of the second class twelve (12) units, and high schools of the third class eight (8) units. High schools of the first class shall include in their program each year all the constants named in the list under Program of Studies, page 28; second class schools shall include three-fourths of the units of this list of constants, among which shall be courses I., II. and III. in English and elementary algebra; third class schools shall include one-half of the units of these constants, among which shall be courses I. and II. in English and elementary algebra.

Schools in the first class list shall be prepared to offer all courses named in the program of studies for high schools, p. 28; but no course, beside the constants, should be offered unless desired by four or more pupils. Other schools should not offer courses in which there are only one or two pupils to pursue them.

4. The minimum number of units of work required of pupils for *graduation* shall be fifteen (15) and no state high school whether first, second or third class, shall *graduate* pupils who have not secured fifteen units of credit; but schools may have exercises and

give *certificates* to pupils who have accomplished a smaller number of units of work.

*The superintendent or principal of every state high school shall require that every pupil graduating from said high school shall be well informed in reading, writing, spelling, geography, English language and Grammar, United States history, arithmetic, human physiology and hygiene, and civil government.*

5. Courses in agriculture are outlined and it is urged that schools offer this work.

Manual training and domestic science are required in schools on the first class list, and it is urged that second and third class schools also offer these subjects.

6. Superintendents, principals and boards of education are urged to adopt measures to secure the pursuit by pupils of such courses as will be for the pupil's greatest benefit and make his high school course, or curriculum, have, finally, thoroness, strength and unity.

7. Certificates will be given by the examiner to successful examinees in the several subjects passed on examination. These certificates are accepted by the university, the agricultural college, the state normal schools, the normal-industrial school and the school of science in lieu of the usual entrance examinations.

8. Two completion examinations shall be offered each year in high school and elementary school branches to all classified schools; but high schools of the first class shall not be required to pass final examinations in all subjects named by the high school board, but they shall be examined in such subjects as the examiner may require, notice of the required examinations being given to all schools of this class at the same time and not more than fifteen days before the date of the examination provided, that schools of this class may, at their discretion, hold final examinations in all subjects offered by the board upon the usual application to the examiner for the questions. The examiner may, at his discretion, offer the examinations of the board to schools of three or more teachers, not classified but doing at least four units of high school work and giving promise, with encouragement, of doing, in the near future, the entire eight units requisite for classification. Other schools will not be entitled to take the examinations.

In securing state high school board credit through these examinations the amount of time devoted to preparation is an element.

The examiner will offer examinations in subjects named in the

program of studies, page 28, of this manual and in those subjects only.

The report of the examiner to the schools on the May-June examinations will be made on or before August 30th following. This report will be made to the clerk of the local school board, unless a special request to make it to another is received.

9. Music and drawing shall be offered in every high school but pupils, individually, may elect to pursue these subjects or not to pursue them. Schools shall also offer courses in the elective sciences as well as in physics and shall be equipped for this work as specified under Classification of Schools, page 18.

10. Credits shall not be allowed in both of two subjects that are largely duplicates of each other; as, ancient history and general history, modern history and general history, the unit course in botany and the unit course in zoology.

11. The board of education of each state high school, at least a month before the close of the school year, shall report to the high school board the condition of such school,—stating the number of pupils in the high school, the number of subjects pursued during the year, the number of pupils studying each subject and the number graduating.

#### E.—RULES FOR CONDUCTING HIGH SCHOOL EXAMINATIONS.

All superintendents, principals and teachers in the high school department, appointed to conduct examinations of the state examiner, are required to read Rules numbered 3, 4, 5, 6, 7, 8, 9, 10 and 11 to the class before beginning examinations.

(Many mistakes in conducting and reporting these examinations would be avoided, if those who conduct and report them would read these rules carefully and also other statements sent them by the examiner.)

Examinations will hereafter be given subject to the following rules—*which must be strictly followed*:

1. Two examinations will be offered each year. The first examination will begin on the Monday of the twentieth week of the semester which opens on the first Monday in September. The second examination will begin on the Friday of the eighteenth week of the semester which opens immediately after the close of the first semester; but when Memorial Day falls on one of the examination days, then the examination shall begin on Thursday of the 18th

week. (The January examination in 1912 begins Jan. 15. The May examination in 1912 begins May 23rd.)

No examinations shall be held on Memorial Day or Saturday.

The examinations in the several subjects will take place in the following order:

#### FIRST DAY

<i>English Grammar</i> , 8th grade.	<i>English II</i> , a. m.
a. m.	<i>Modern Languages</i> , p. m.
<i>Latin Grammar</i> , a. m.	Arithmetic, High School.
Vocal Music.	Senior English Grammar.
<i>Vergil</i> , a. m.	

#### SECOND DAY

<i>Arithmetic</i> , 8th grade, a. m.	Drawing, Freehand.
<i>English I.</i> , p. m.	<i>Adv. U. S. History</i> (high school)
<i>Solid Geometry</i> , a. m.	
<i>Higher Algebra</i> , a. m.	p. m.
<i>Trigonometry</i> , a. m.	<i>Civics</i> (high school) a. m.
<i>Caesar</i> , a. m.	Commercial Geography.

#### THIRD DAY

<i>Geography</i> , 8th grade, a. m.	<i>American Literature</i> , p. m.
<i>Physical Geography</i> , a. m.	<i>English Literature</i> , p. m.
Bacteria, Yeasts and Molds.	Bookkeeping.
<i>El. Geology</i> , a. m.	Commercial Law.
<i>Botany</i> , a. m.	Shorthand.
<i>Zoology</i> , a. m.	Typewriting.
<i>Elementary Algebra</i> , p. m.	Drawing, Mechanical.

#### FOURTH DAY

<i>U. S. History</i> , 8th grade, a. m.	<i>Political Economy</i> , p. m.
<i>General or Ancient History</i> , a. m.	Agriculture.
<i>Modern History</i> , a. m.	Chemistry.
<i>English History</i> , a. m.	Penmanship and Spelling (high school.)
<i>Plane Geometry</i> , p. m.	

## FIFTH DAY

Reading, Spelling and Penmanship, 8th grade.	Psychology.
	Greek.
<i>Physiology</i> , (high school) a. m.	Manual Training—Woodwork.
<i>Physics</i> , a. m.	Domestic Science and Art.
<i>Cicero</i> , p. m.	Horticulture.
Pedagogy.	

## SIXTH DAY

Postponed examinations.

The date and order of examinations in subjects printed in *Italics* must not be changed under any circumstances. If the other subjects can not be taken on the day specified on account of conflict, they must be taken as soon thereafter as possible, on this sixth day if necessary.

*No examination shall be taken earlier than the day appointed.*

In case of conflict, pupils should begin early in the half day and write on both subjects in the same half day.

It is to be understood that the examinations set for any day may be taken either in the forenoon or afternoon, except in cases in which a. m. or p. m. is designated.

II. All applications for questions, stating the subjects and number of question papers desired, must be made to the high school examiner on requisition blanks at least twenty days prior to the date set for beginning the examinations. The requisition blanks will be furnished on application to the examiner. High schools of the first class shall not be required to pass final examinations in all subjects named by the high school board, but they shall be examined in such subjects as the examiner may require, notice of the required examinations being given to all schools of this class at the same time, and not more than fifteen days before the date of examination provided, that schools of this class may, in their discretion, hold final examinations in all subjects offered by the board upon the usual application to the examiner for questions. The examiner may, in his discretion, offer the examinations of the board to schools of three or more teachers, not classified but doing at least four units of high school work and giving promise, with encouragement, of doing in the near future the entire eight units required for classifi-

cation. Other schools will not be entitled to take the examinations.

III. The envelope containing the questions must be retained by the superintendent or principal in a safe place *until the time appointed for examination*, and *under no circumstances* shall the envelope be opened except in presence of the class when seated and ready for work. The precise moment of the distribution of questions must be announced to the class and observed as the examination proper begins at that time.

IV. The period of examination is three hours in all subjects and no more than *three hours* shall be allowed for an examination, and no examination shall be divided, nor shall any pupil be allowed extra time, a second trial, to take the examination at any other time than that at which the class take it, or to copy his manuscript at any other time than within the three hours.

V. The examination shall be conducted by the superintendent or the principal teacher in the high school department.

VI. Each candidate must be supplied with *white legal cap* paper, pen and black ink and will not be allowed to communicate with anyone except the examiner in charge during an examination; nor may he leave his seat until he has completed his work on the entire number of questions. In case of any communication the offender's paper must be thrown out.

VII. Each candidate shall write at the head of his answer paper the date (day of the month and day of the week) on which the paper is written and whether it is written in the forenoon or afternoon.

VIII. No explanation whatsoever shall be made concerning the questions (not even to explain or call attention to a typographical error), and no teacher or other person shall be allowed to criticise or inspect the work of the pupils while in progress. Each pupil is to rely solely on his own judgment as to the meaning of every question, and any effort on the part of any pupil to give or obtain aid must be followed by instant dismissal from the room.

IX. Should there be any typographical error, such as to make a question, absurd, unintelligible or unsolvable, if students see the error, and make the necessary changes and answer the question correctly, they are to be allowed full credit in the regular manner, but if they do not see the mistake and are thus unable to answer the question, it should be left out of account entirely in figuring up the

credits, and the paper graded upon the basis of credits allowed for the remainder of the questions.

X. The answers are to be written with *black ink* and not with *lead pencil*, and are to be arranged and numbered in the order of the questions. Special attention should be *given to the general order, legibility and neatness* as well as correctness of the work.

XI. In mathematics, *the entire operation must be given. Mere results will be marked zero.* In the translation required in the language papers, no dictionaries or vocabularies must be used.

#### MARKING THE PAPERS

XII. The superintendent or principal shall examine and mark *in red ink* all the answers in each subject. In case the principal is unable to read all the papers he may be assisted by any of the teachers of the high school department appointed for that purpose. *Each answer* entitled to a definite number of credits *must be marked separately* and not a mark given to the paper as a whole. The credits assigned should be reduced to a scale of one hundred and the grade entered on filing margin as "principal's mark." Papers falling below 65 per cent., or illegible or slovenly in appearance, must not be sent to the examiner.

#### SENDING PAPERS TO THE EXAMINER

XIII. Papers when marked should not be rolled; but those of each writer on each subject must be folded separately with the upper part of the first page on the outside and those in each subject should be tied together with the class list, *properly filled out* and placed on the outside, so that the package will show, without being *untied*, the place, subject, etc. As the amount of time spent in preparation is an element in securing credit, the data called for on these class lists must be complete. Strong rubber bands are preferable to twine or cord. The papers in all subjects should be tied together in one package, carefully wrapped and sealed, and sent by mail or express, charges prepaid, to the State High School Examiner, University, N. D. If the package is very small it may be sent by mail.

XV. The principal's certificate and the class list must be sent properly filled out and signed.

**APPEAL FROM EXAMINER'S MARKINGS**

XVI. The appeals from the examiner's markings must be made within ten days after the receipt of the examiner's notice of results.

Address,

STATE HIGH SCHOOL EXAMINER,  
University, North Dakota.

### III. PROGRAM OF STUDIES FOR HIGH SCHOOLS

#### CONSTANTS FOR PUPILS (see page 20)

NAMES OF SUBJECTS	YEAR TO BE PURSUED	Synopses on pages
American Literature (Eng. III.)	3rd	34
Civics, $\frac{1}{2}$ unit	3rd or 4th	46
Common School Subjects		
English I.	1st	32
English II.	2nd	33
History, Adv. U. S., $\frac{1}{2}$ unit	3rd or 4th	45

#### CONSTANTS FOR THE SCHOOL (see pages 18 and 20)

Algebra, Elementary	1st or 2nd	41
American Literature (Eng. III.)	3rd	34
Civics, $\frac{1}{2}$ unit	3rd or 4th	46
Common School Subjects		
Domestic Science and Art, $\frac{1}{2}$ or more units	1st and 2nd	71-78
Drawing, Freehand, one year, $\frac{1}{2}$ unit	1st or 2nd	81
English I.	1st	32
English II.	2nd	33
Geometry, Plane	2nd or 3rd	42
History, Adv. U. S., $\frac{1}{2}$ unit	3rd or 4th	45
History, General or Ancient	1st or 2nd	42-43
Manual Training, $\frac{1}{2}$ or more units	1st and 2nd	68-69
Music, Vocal, one or two years, $\frac{1}{2}$ unit	1st and 2nd	81
Physics	3rd or 4th	48

#### ELECTIVES

##### *Commercial Subjects.*

Arithmetic, High School, $\frac{1}{2}$ unit	1st and 2nd	85-86
Bookkeeping, $\frac{1}{2}$ or one unit	2nd or 3rd	82
Geography, Commercial, $\frac{1}{2}$ unit	2nd	83
Law, Commercial, $\frac{1}{2}$ unit	3rd or 4th	83
Penmanship and Spelling, $\frac{1}{2}$ unit	1st	82
Shorthand and Typewriting, one or more units	3rd and 4th	84

##### *English Language.*

English Literature (Eng. IV.)	4th	34
Grammar, senior review of English, $\frac{1}{2}$ unit	4th	87

##### *Foreign Language.*

Caesar, Latin II.	2nd	36
Cicero or Caesar, Latin III.	3rd	37
French, I.	2nd or 3rd	40
French, II.	3rd or 4th	40
German, I.	2nd or 3rd	39
German, II.	3rd or 4th	39
Greek, I.	3rd	38
Greek, II.	4th	38
Latin I., Grammar	1st	36
Second-year Latin	2nd	36
Spanish, I.		38
Spanish, II.		38
Virgil or Cicero, Latin IV.	4th	37

*History and Economics*

History, English, $\frac{1}{2}$ unit	2nd or 3rd	44
History, Modern	2nd or 3rd	42-44
Polit. Econ., General Economics, $\frac{1}{2}$ unit		47

*Mathematics*

Algebra, Higher, $\frac{1}{2}$ unit	3rd or 4th	41
Arithmetic, High School, $\frac{1}{2}$ unit	4th	85-86
Geometry, Solid, $\frac{1}{2}$ unit	3rd or 4th	42
Trigonometry, Plane, $\frac{1}{2}$ unit	3rd or 4th	42

*Miscellaneous.*

Common School Courses	Eight grade	87
Drawing, Mechanical, $\frac{1}{2}$ or one unit	1st and 2nd	78-80
Pedagogy, $\frac{1}{2}$ unit	3rd or 4th	85
Psychology, $\frac{1}{2}$ unit	3rd or 4th	85

*Science.*

Agriculture, The Elements of		66
Bacteria, Yeasts and Molds, $\frac{1}{2}$ unit		64
Botany	1st or 2nd	50
Botany, $\frac{1}{2}$ unit	1st or 2nd	50-53
Chemistry	3rd	57
Geography, Physical, $\frac{1}{2}$ unit	1st or 2nd	60
Geology, Elementary, $\frac{1}{2}$ unit	1st or 2nd	62
Horticulture		67
Physiology, $\frac{1}{2}$ unit	3rd	56
Zoology	1st or 2nd	53
Zoology, $\frac{1}{2}$ unit	1st or 2nd	53-55

## VI. SUGGESTIVE HIGH SCHOOL CURRICULA

FOREIGN LANGUAGE	COMMERCIAL
English I. Elementary Algebra Botany or Zoology Latin I. Music	English I. Elementary Algebra Botany or Zoology Pen. and Sp. and Com. Geog. Music
English II. Plane Geometry General or Ancient History Caesar Drawing	English II. Plane Geometry General or Ancient History Bookkeeping Drawing
English Literature Higher Alg. and Sol. Geom. English Hist. and Gen. Economics Cicero or German I.	American Literature Shorthand and Typewriting Eng. Hist. and Com. Law German I.
Physics Vergil or German II. Adv. U. S. Hist. and Civics Common School Subjects	Physics German II. Adv. U. S. Hist. and Civics Common School Subjects Shorthand and Typewriting
TEACHERS	SCIENTIFIC
English I. Elementary Algebra Manual Training or Domestic Science and Art Latin I. Music	English I. Elementary Algebra Man. Tr. or Dom. Sci. Botany or Zoology Music.
English II. General or Ancient History Botany or Zoology Caesar Drawing	English II. General or Ancient History Chemistry Plane Geometry Drawing
English History and Phys. Geog. Agriculture American Literature Pedagogy and Psychology Bookkeeping	Eng. Hist. and Higher Alg. Agriculture English Lit. German I.
Physics Adv. U. S. Hist. and Civics English Literature Common School Subjects	Physics Adv. U. S. Hist. and Civics German II. Common School Subjects

## V. CREDITS ALLOWED FOR HIGH SCHOOL WORK TOWARD TEACHERS' CERTIFICATES

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The board of examiners for teachers' certificates is authorized by law, under its rules and regulations, to credit the specific marks or standings given in high schools on those subjects required for certification of teachers. These subjects are: reading, arithmetic, language and grammar, geography, United States history, physiology and hygiene (including physical culture), civil government, pedagogy, music, drawing, agriculture, domestic science, manual training, for a second grade elementary teachers' certificate; and in addition to these, psychology, elementary algebra, plane geometry, physics, physical geography, botany, American literature, for a first grade elementary teachers' certificate.

Diplomas from high schools doing four years of high school work granted to graduates who have had psychology, pedagogy, and two senior-review subjects, shall be accredited as second grade elementary teachers' certificates.

## VI. SYNOPSIS OF SUBJECTS

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### ENGLISH

The courses in English have been thoroly outlined in four syllabi,\* which aim to present the subject definitely. As these syllabi are complete, brief synopses, giving the classics to be used, seem to be all that is necessary here.

#### ENGLISH I

##### ONE UNIT

Macaulay's Horatius at the Bridge for brief study, followed by short themes to be carefully corrected and serve as a basis for introducing the further study of grammar.

Capitalization, punctuation and spelling based upon the above themes.

Burroughs. Sharp Eyes.

Themes and study of parts of speech.

Hawthorne. Twice Told Tales.

Themes and study of case, pronouns, etc.

Dickens. Christmas Carol.

Themes and study of paragraph structure.

Irving. Sketch Book (Rip Van Winkle. Legend of Sleepy Hollow and one or two other sketches).

Formal study of narration.

Hale. Man Without a Country.

Formal description.

Letter writing.

Figures of speech.

*Outside Reading,—*

Any three of the following:

Cooper. The Last of the Mohicans.

Poe. Gold Bug.

Warner. A Hunting of the Deer, How I Killed a Bear, Lost in the Woods, Camping Out.

Dodge. Hans Brinker.

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\*A limited supply of the syllabi will be ready for mailing about Oct. 1, 1911, and may be had by addressing the state high school inspector.

Boys' King Arthur.  
Eggleston. Hoosier School Boy.  
Warner. Being a Boy.  
DeFoe. Robinson Crusoe, Part I.

## ENGLISH II

### ONE UNIT

Study of words.  
Arnold. Sohrab and Rustum, critical study and themes.  
Study of sentences.  
Study of paragraphing.  
Macaulay. Essay on Addison.  
DeCoverly Papers, critical study and themes.  
Study of narration.  
Eliot. Silas Marner, critical study and themes.  
Study of description.  
Coleridge. Ancient Mariner, critical study and themes.  
Study of figures of speech.  
Study of versification.  
Burns. Cotter's Saturday Night, To a Mouse, To a Mountain  
Daisy, For A' That and A' That, Highland Mary, etc., critical study  
and themes.  
Shakespeare. Merchant of Venice, critical study and themes.

### *Outside Reading,—*

Any three of the following:  
Kipling. Captains Courageous or Jungle Books.  
Scott. The Lady of the Lake or Marmion.  
Shakespeare. As You Like It.  
Stevenson. Treasure Island or Travels with a Donkey.  
Goldsmith. Vicar of Wakefield.

## ENGLISH III

### ONE UNIT

### STUDY OF THE HISTORY OF AMERICAN LITERATURE

#### *Colonial Period (1607-1765)*

Reading,—  
Selections found in Old South Leaflets by John Smith, Wm.  
Bradford, Morton, Roger Williams, Anne Bradstreet, et al.

Review of diction and description.  
*Revolutionary Period (1765-1789)*

Reading,—

Selections from political literature,—Jefferson, Otis, Henry, Hamilton, Jay, Madison, Washington, et al.

Short poems of the times,—Trumbull, Dwight, Barlow, Freneau. Revolutionary songs and ballads.

Selections from Benj. Franklin.

Themes,—

*Period of the Republic (1789-1910)*

Reading,—

A few poems from Drake, Halleck, Paine, Woodworth, Morris, Willis.

Ten poems from Bryant.

Poe. Three, from Raven, Bells, Israfel, Haunted Palace, Ulalume; two from Fall of the House of Usher, Masque of the Red Death, Descent into the Maelstrom, Domain of Arnheim.

Short selections from writers of the New England School.

Emerson. American Scholar and short poems.

Emerson. Concord Hymn.

Review of Narration.

Reading,—

Hawthorne. Short stories selected.

Longfellow. Short poems selected.

Longfellow. Paul Revere or Hymn to the Night.

Whittier. Tent on the Beach, Barefoot Boy and short poems selected.

Holmes. Chambered Nautilus, and short poems selected.

Lowell. Short poems and prose selection.

Webster,. Two from First Bunker Hill Oration, Second Bunker Hill Oration, Adams and Jefferson, Reply to Hayne.

Taylor. Lars.

Whitman. O Captain! My Captain!

Lincoln. Gettysburg Address.

Aldrich. Baby Bell.

Warner. My Summer in a Garden.

Outside Reading,—

Any four of the following:

Hawthorne. House of Seven Gables.

Warner. My Summer in a Garden.

Thoreau. Succession of Forest Trees, Wild Apples, etc.

Curtis. Prue and I.

Churchill. Richard Carvel.

Parkman. LaSalle or Oregon Trail.

Clemens. Tom Sawyer.

## ENGLISH IV

### ONE UNIT

#### THE HISTORY OF ENGLISH LITERATURE WITH COLLATERAL READING

Study of History of English Literature as outlined in the syllabus.

Masterpieces for close, critical study,—

Shakespeare. Macbeth.

Milton. Paradise Lost, Books I. and II.

Burke. Conciliation.

Palgrave. Golden Treasury, Series I., Part IV.

Carlyle. Essay on Burns.

Masterpieces for outside reading,—

Shakespeare. Julius Caesar.

Tennyson. Coming of Arthur, Lancelot and Elaine, Guinevere,

The Passing of Arthur.

Two from the following,—

Blackmore. Lorna Doone.

Dickens. Tale of Two Cities.

Eliot. Silas Marner.

Mrs. Gaskell. Crawford.

Scott. Ivanhoe.

Thackeray, Henry Esmond.

Study of rhetorical principles.

If this course is taken up as third year high school work, the special work in rhetoric should be Expositon; if, however, as recommended, this course is taken up during the fourth year, the special advanced work in rhetoric should be Argumentation.

## LATIN

Pupils should be held strictly to the use of clear idiomatic English in their translations, though they should be led from the start to notice carefully the Latin order of words and to comprehend the thought in that order.

In the reading of the Latin text the teacher should see not only that each word is correctly pronounced but also that the words are properly grouped. He should strive to teach intelligent, expressive reading. The Roman method of pronunciation should be used.

## LATIN I

## ONE UNIT

*Latin Grammar and Easy Latin Prose.*

As the work of this year is fundamental, it is of the utmost importance that it be accurate and thorough. The aim should be the acquisition of a vocabulary of a few hundred words, a thorough mastery of the regular and most common irregular forms, and a firm grasp of the more usual constructions. To accomplish this, constant review, oral and written, is necessary. Therefore, when the declensions, the conjugations and comparisons have been studied, there should be frequent practice in the declensions of nouns, pronouns and adjectives, in the conjugation of verbs, and in the comparison of adjectives and adverbs. Much of this can be done in connection with the work in composition, the pupil being asked to write a sentence on the board and to decline a noun or pronoun and give a synopsis of a verb in the sentence. All long vowels should be marked in all written work. After the first two or three lessons, translation, oral and written, from Latin into English, and from *English into Latin* should form an *important part of every recitation*. Nor should the teacher restrict himself to the sentences in the text book; he should compose a large number himself, making repeated use of those words and constructions which it is most necessary for pupils to know. Word formation should receive some attention.

## LATIN II

## ONE UNIT

The reading matter of this year may consist entirely of Caesar's Commentaries, or a somewhat freer and wider course may be given. Two independent examinations are furnished so as to accommodate schools following either plain. The courses are as follows:

(a) "Caesar." The first four books of Caesar's Gallic War.

(b) Selections from Caesar equivalent in amount to two books, and selections from Viri Romae and Nepos and, perhaps, other prose equivalent to two more books.

With either reading course the following suggestions should be carried out:

1. Reading of Latin aloud, and translations into clear, idiomatic English.

2. The syntactical relation of each word should be understood, and the thought fully comprehended; principal parts of all verbs memorized; frequent practice in the declension of nouns, pronouns and adjectives, in the conjugation of verbs, and in the comparison of adjectives and adverbs. This grammatical work should receive great emphasis.

3. The life of Caesar; the geography of the country; the organization of the Roman army, and the Roman art of war; all other subjects necessary for an understanding of the text read.

4. A careful, thoro review of the forms and word-formation should be made, and a systematic study of syntax should be begun.

5. *Latin composition at least once a week.* Sight reading. Memorizing of noteworthy passages.

### LATIN III

ONE UNIT

Cicero or Books V., VI. and VII. in Caesar.

Independent examinations will be offered for these two courses.

If for the reading Cicero is chosen, read Cicero's orations: In Catilinam, De Imperio Pompei, and Pro Achia, six orations in all.

1, 2 and 5 as in the second year.

3. The life of Cicero; the history of his time; Roman oratory; Roman government; all other subjects necessary for an understanding of the text read.

4. The systematic study of syntax continued.

6. A careful study of the structure of each oration, but especially of the De Imperio Pompei.

If for the reading Books V., VI. and VII. in Caesar's Commentaries are chosen, follow directions 1, 2, 3, 4, 5 under Latin II.

### LATIN IV

ONE UNIT

Cicero or Vergil.

If the course in Cicero is pursued, follow directions regarding

Cicero under Latin III. If the course in Vergil is selected, read the first six books of Vergil's Aeneid.

1, 2 and 5 as in the second year.

3. The life of Vergil; all subjects of a geographical, archaeological, mythological or other nature necessary for an understanding of the text read.

4. A study of the poetic forms and constructions met in the text.

6. A study of the structure of the Dactylic Hexameter and careful attention to the correct reading of it.

#### GREEK I. AND II

Synopses of these courses will be offered on application to the inspector.

#### SPANISH I

ONE UNIT

The Modern Language Association of America\* recommends the following two years' course in Spanish for our secondary schools:

First year's work: (a) Spanish grammar with exercises; (b) a well graded reader (100 pages); (c) pronunciation and memorizing of easy current Spanish phrases; (d) writing of simple business letters.

NOTE. It is assumed that there will be five recitations a week for at least thirty-six weeks of each year. It is urged that the emphasis be placed on careful, thorough work, with much repetition rather than much translation. First year pupils should familiarize themselves with the Spanish-American countries, their geography and history—the Philippines, Porto Rico, the Panama Canal Zone, Cuba, and South America. Review Spanish-American history,—period of discovery, conquest, and colonization. Celebrated men and events.

#### SPANISH II

ONE UNIT

Second year's work: (a) Thorough review of grammar; (b) reading (not more than 200 pages) of short stories, or *El Capitan Veneno*; (c) writing of longer business letters and speaking of colloquial Spanish.

NOTE. There should be more practice in speaking and writing Spanish, in the second year, according to the recommendations of the committee. Second year pupils should familiarize themselves with

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\*Modern Language Proceedings for 1910, pages XVI. and XVII.

the recent history of Spanish countries; the expansion of the United States, and study the history of Spain—its Golden Age, its great men and its great books. Read about the Moors; Ferdinand and Isabella, Charles V., Philip II.; Cervantes, Lope de Vega, and Calderon; Madrid; the Escorial; the Alhambra; the Armada; the Inquisition; Don Quixote.

#### NOTICE

This committee further urges\* that every secondary school in which Spanish is taught should have as minimum library equipment, a Spanish-English English-Spanish dictionary—Cuyas or Velasquez, (although nearly all Spanish texts have vocabularies); a history of Spanish literature, Ticknor's or Kelly's; a history of the Spanish people, Hale's, but preferably Hume's; maps of Spain and of Pan-America. The new Encyclopedia Britannica should prove indispensable for general reference and for information on Moor, Spaniard, Mexican, etc.

#### GERMAN I

ONE UNIT

The pupil should acquire a correct pronunciation and to that end the instructor should give special attention to the training of the ear and organs of speech. Practice in conversation may consist largely of questions and answers, in German, based upon passages read. Translation of German into English. The essentials of German grammar, but not a complete treatment of the subject.

For reading, translation and conversation: A hundred pages of any easy prose.

For grammar and translation into German: The more essential parts of an elementary grammar and such "exercises" as are usually found in standard texts. Subjunctives, rules of syntax, and rare idioms should receive but little attention.

#### GERMAN II

ONE UNIT

Practice reading German smoothly and with expression. Conversation, consisting largely of questions and answers in German, based upon the passages read, and free reproduction, in German, of paragraphs and short stories. Translation of German into idiomatic English. The study of grammar continued.

\*Modern Language Proceedings for 1910, pages XVI. and XVII.

For reading, translation and conversation: Storm's *Immensee*. Leander's *Träumereien*. Gerstacker's *Germelshausen*. Benedix's *der Prozess*. Wilhelm's *Einer Muss Heiraten*.

For grammer: Complete and review an elementary text.

### FRENCH I

#### ONE UNIT

Follow directions carefully. (1) Be practical and translate early; (2) learn to write a simple letter in French; (3) familiarize beginners with the system of Phonetic\* transcription as a help to French pronunciation; (4) commit to memory and use freely the Verbs, Phrases, and Idioms of everyday French; (5) learn about Richelieu, Louis XIV., Moliere, the *Marseillaise*, Napoleon, and Hugo.

### FRENCH II

#### ONE UNIT

Review the fundamental features of the first year. (1) Re-emphasize pronunciation; (2) memorize the 1st, 6th and 7th stanzas of *LaMarseillaise*; all of *Carcassonne*; and the 1st, 2nd, 3d, 5th, 7th, and 18th stanzas of *La Nuit de Decembre*; (3) learn to write a short business letter; (4) write in French a short description of the Sorbonne, the French Academy, the Age of Louis XIV., the French Revolution, Napoleon and two authors read in class.

NOTE.—Schools offering French should have the following equipment: 1. Edgren's French Dictionary (Holt). 2. *Le Petit Larousse Illustre Dictionnaire Encyclopedique* (No. 17 Montparnasse St., Paris, c/o Librairie Larousse, cost \$1). 3. Map of Europe (Rand-McNally's, Chicago). A map of France (St. Paul Book & Stationery Co., St. Paul, Minn.). A plan of Paris (*Nouveau Paris Monumental et Environs de Paris*, (No. 6 St. Peres St., Paris, Garnier Freres, cost 50 cents). 4. Kastner & Atkin's History of French Literature (Holt). 5. A few of the standard French grammars.

For additional information, details, etc., address the Department of Romance Languages, University, N. D.

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\*Cf. Proceedings (pp. 106-113) Twenty-first Annual Session of the N. D. E. A., 1908, for Professor LeDaum's article on "Phonetics and the Teaching of Modern Languages.

## ELEMENTARY ALGEBRA

## ONE UNIT

At the beginning there should be a short treatment of this subject in such a manner as to make its relation to arithmetic as close as possible. Throughout the course it should be shown that the definitions and principles of arithmetic with some extension of meaning hold true in algebra. At the outset the pupil should learn that in algebra he is dealing chiefly with number and that each letter or combination of letters (algebraic expressions) represents a number. The first problems should be such as may be solved as an exercise in either arithmetic or algebra and should be solved both ways. Problems that may be solved by the use of linear, or simple, equations should be placed early in the course.

After the above preliminaries are completed, the following topics should be treated. The order in which many of them is taken up is not important: Positive and negative numbers. Axioms. Addition. Subtraction. Signs of aggregation. Multiplication. Division. Special products. Factors. Highest common factor. Lowest common multiple. Fractions in algebra. Fractional equations. Simultaneous equations of two and three unknown numbers. Involution. Evolution. The simpler work in negative, literal, fractional and zero exponents. The simpler work in radicals, and radical equations. Graphic solutions. Pure quadratics. The simpler work in affected quadratics—solutions by completing the square and by factoring. Problems in simultaneous quadratics—two unknowns. The simpler work in ratio and proportion.

The following topics are not included in this course: Highest common factor by continued division. Simultaneous equations involving four or more unknown numbers. Indeterminate equations. Inequalities. The factor theorem. The more involved work in radicals, quadratics and ratio and proportion. The theory of exponents. Imaginary numbers. Equations in the quadratic form. Theory of the quadratic equation.

## ADVANCED ALGEBRA

## ONE-HALF UNIT

This course includes the following topics: General principles of the fundamental processes. Signs of aggregation. Equations. Factoring. The factor theorem. Highest common factor, includ-

ing the process by continued division. Algebraic fractions. Simultaneous equations. Graphs. Inequalities. Indeterminate equations. Theory of exponents. Radical equations. Imaginary numbers. Quadratics. Ratio, proportion and variation. Series. Binomial theorem. Logarithms.

### PLANE GEOMETRY

ONE UNIT

As presented in the ordinary text books.

Care should be taken that the pupil gains not merely a superficial readiness in using the form of geometric proof, but also an insight into the underlying principles of the subject which will enable him to apply his knowledge rightly.

Varied examples involving numerical computation should be given, and occasional brief practice in drawing to scale will perhaps be found helpful.

Effort should be made through abundant work in original exercises and otherwise to develop in the pupil a prompt and independent facility in geometrical reasoning and proof, in constructions and in computation of problems involving mensuration.

### SOLID GEOMETRY

ONE-HALF UNIT

The course as given in the usual text books in solid geometry.

The suggestions given above for plane geometry may also be observed in teaching this subject.

### PLANE TRIGNOMETRY

ONE-HALF UNIT

The definitions and relations of the six trigonometric functions as ratios; the use of tables and the elementary theory of logarithms; the solution of right and oblique triangles and considerable practice therein; the proof of important formulas for the solution of triangles, for the ratios of the sums and difference of angles and for other trigonometric transformations; some practice in such trigonometric transformations and verifications of identities as are given in the ordinary text book.

### HISTORY

General history as a one-year course, and ancient and modern

history as a two-year course, are in part duplicate subjects; therefore, a pupil who receives credit in general history shall not receive credit in ancient or modern history, and vice versa. Pupils should pursue general history or both ancient and modern history.

### GENERAL HISTORY

#### ONE UNIT

The beginnings of civilization in the East. The contributions of Greece and Rome. The break-up, and transition to the new. Feudalism; France; Germany; Holy Roman Empire; Empire and Papacy; Crusades; rise of cities; rise of monarchic states; the Renaissance; the Reformation; rise of modern nation states. The French Revolution; modern European development; problems of the present age.

### ANCIENT HISTORY

#### ONE UNIT

This full year course in ancient history should be much more comprehensive than that contemplated for the first half of the course in general history. It should begin with a brief sketch of the oriental nations in order to show how our civilization began in the East, and how these peoples affected the larger nations of Europe. The Greek history should be more carefully studied. The principal emphasis should be laid first, upon the making of the two leading states of Greece,—Sparta and Athens; second, upon the achievements of the Greeks outside their own narrow land, as seen in their great colonizing movements, their wars with Persia and the effort of Athens to build up a world empire; and third, upon the conquests of Alexander and the period that followed in which Greek ideas dominated the whole eastern world.

The Roman history should be studied with a view to bring out the dominant elements in the character of the people, their party strife in the evolution of their constitution, the great period of territorial growth and conquest, and last and most important of all, the unification of the world by the Roman roads and bridges, the Roman legions and the Roman law.

The era of the great migrations; the rise of the Frankish Kingdom; Charlemagne. To 800 A. D.

## ENGLISH HISTORY

## ONE-HALF UNIT

The location and physical conditions of England. The effect of the fusing of populations on the formation of English institutions. The growth of political institutions as conditioned by the economic changes and social stratification. The Reformation in England. The industrial revolution, social legislation and reform since that time. An interesting book of about 400 pages should be used as a text.

## MODERN HISTORY

## ONE UNIT

From 800 A. D. to the present time. This should be a much more comprehensive course in European history than that contemplated for the latter half of the course in General History. A book of 500 to 700 pages should be used as a text and it should be amply supplemented.

## REFERENCE,—

Adams, Growth of the French Nation.  
Archer & Kingsford, The Crusades.  
Bulfinch, Age of Fable, or Beauties of Mythology.  
Church, Story of the Odyssey.  
Church, Story of the Iliad.  
Church, Roman Life in Days of Cicero.  
Eginhard, Life of Charlemagne.  
Fisher, Outlines of Universal History.  
Freeman, William the Conqueror.  
Freeman, Old English History.  
Green, Short History of the English People.  
Gulick, Life of the Ancient Greeks.  
Guerber, Myths of Northern Lands.  
Jebb, Greek Literature Primer.  
Johnston, Private Life of the Romans.  
Motley, Peter the Great.  
Mahaffy, Old Greek Life.  
Robinson, Development of Modern Europe. 2 vols.  
Rose, Napoleon.  
Tozer, Classical Geography.  
Webster, General History of Commerce.  
Wheeler, Alexander the Great.

## ADVANCED UNITED STATES HISTORY

## ONE-HALF UNIT

For a complete treatment of this subject please see the syllabus compiled by the special committee. Briefly the subject includes the study of the following periods:

- I. Pre-Columbian, 4 recitations.
- II. Exploration and Settlement, 5 recitations.
- III. Colonial Development, 3 recitations.
- IV. American Revolution, 6 recitations.
- V. Establishment of National Government (to 1797), 8 recitations.
- VI. National Expansion, 12 recitations.
- VII. Rise of New Democracy, 15 recitations.
- VIII. Struggle over Slavery, 10 recitations.
- IX. Civil War and Reconstruction, 7 recitations.
- X. The New Era (1877-), 10 recitations.

The above table suggests the number of recitations that should, probably, be devoted to each period; and provides for eighty recitations, leaving some leeway in a semester of ninety days.

The things to be emphasized in this course are: Thorough preparation of the teacher (and of the pupil); academic knowledge, but especially present-day movements with good citizenship in view; careful daily assignments with this same citizenship in view; use of wall maps, map drawing and the study of such geography as should be correlated with the study of United States history; essay writing on United States history topics,—the essay to be corrected by both the history teacher and the teacher of English and the pupil to receive credit for the essay in both subjects. In the appendix of the syllabus, referred to above, topics for these essays may be found.

## REFERENCE,—

Brigham, Geographical Influences in American History.  
Coffin, Old Times in the Colonies.  
Coman, Industrial History of the United States.  
Channing, Student's History of the United States.  
Earle, Home Life in Colonial Days.  
Hart, Formation of the Union.  
McMaster, History of the People of the United States from the Revolution to the Civil War. 6 vols.

Parkman, LaSalle and the Discovery of the Great West.  
Stanwood, History of the Presidency.  
Thwaites, The Colonies.  
Wilson, Division and Reunion.

BIOGRAPHY,—

Henry Clay, Schurz. 2 vols.  
Benjamin Franklin, Autobiography.  
Ulysses S. Grant, Wister.  
Alexander Hamilton, Lodge.  
Patrick Henry, Tyler.  
Andrew Jackson, Brown.  
Abraham Lincoln, Schurz.  
George Washington, Lodge. 2 vols.

CIVIL GOVERNMENT

ONE-HALF UNIT

1. AIM.—The aim of this course is two-fold: (1) to stimulate the pupil's interest in government activities; (2) to impart information concerning these activities. The ultimate results of this course, if properly taught, will be the creation of civic intelligence, the application of this civic intelligence to the problems of community welfare, and the assumption by the young citizen of his proper responsibility for understanding difficulties, locating defects, and aiding in the administration of our government.

2. METHODS SUGGESTED.—(1) Text. (2) Collateral. The text book must form the backbone of the course. Select a proper text, dealing with both our state and nation, and have the pupil master it thoroly. The collateral work is also very important. The following lines of collateral work are suggested: Library readings and reports on assigned topics; debates; current-events discussion once a week; visits to local institutions; visit to local meetings such as town meetings, city council meeting, county commissioners' meeting, session of court, etc.; a classified collection (in the form of a Scrap Book or some similar permanent form) of printed matter and pictures pertaining to civli government. One newspaper or magazine dealing with good government, should be taken by the school. Devote about half of the time to the study of national government, and half to the study of state and local government. The study of national government should precede the study of state and local gov-

ernment, since the federal government is the general type followed by the state, and, to a certain extent, by some divisions of local government.

The State High School Board is publishing a syllabus on civics compiled by a special committee. Please see the syllabus for a complete outline.

REFERENCE LIBRARY,—

The following can be had for ten dollars:

Bryce, James—*The American Commonwealth*. 2 vols. 1910 Ed. Macmillan.

Hart, A. B.—*Actual Government*. Longmans.

Harrison, Benj.—*This Country of Ours*. Scribners.

Beard, C. A.—*Readings in American Government*. Macmillan.

Willoughby.—*Rights and Duties of American Citizenship*. American Book Company.

The following reference books may be had free by applying for the n. They should be found in every school library:

North Dakota Blue Book. Secretary of State, Bismarck, N. D.

Statistical Abstract of the U. S. Bureau of Statistics, Washington, D. C.

## POLITICAL ECONOMY

ONE-HALF UNIT

The objects of this course are two-fold: (1) It aims to create and stimulate in the pupil an intelligent interest in the economic life of his immediate neighborhood, and his county, state and nation. This is essential, since economic or material prosperity underlies any advance in civilization. (2) It aims to give the pupil the mastery of a few sound economic principals. The larger part of the time should be devoted to a mastery of underlying economic principles which are now accepted as axiomatic. Great care should be exercised in the study of economic questions. The purpose of the course is to offer sound principles illustrated by concrete examples.

This course should begin with a survey of the industrial stages through which civilized society has passed. This should be followed by some consideration of the industrial history of the United States. The greater portion of the work on the course should be put on: Consumption of wealth; production of wealth, definition and factors; exchange, money, banking and credit, international trade,

tariff; distribution, interest, rent, profits, wages; review of elementary concepts, wealth, capital, value, utility; and study of economic problems, public finance, socialism.

A good text should be chosen and mastered. Collateral work sufficient to illustrate all of the principles of the text clearly, should be employed. This can be found in part in the free government publications mentioned below, in part by observing the economic life of the community and reading the public press.

REFERENCE LIBRARY,—

Ely, *Outlines of Economics*.

Adam Smith, *Wealth of Nations*.

McVey, *Modern Industrialism*.

White, *Money and Banking*.

Moody, *The Truth About the Trusts*.

Ripley, *Trusts, Pools and Corporations*.

Adams and Sumner, *Labor Problems*.

Taussig, *Tariff History of the United States*.

Coman, *Industrial History of the United States*.

Dewey, *Financial History of the United States*.

Johnson, *American Railway Transportation*.

*The World Almanac*.

United States Government Publications secured by addressing  
Supt. of Public Documents, Washington, D. C.:

Statistical Abstract of the United States (issues annually by the  
bureau of statistics, Department of Commerce and Labor).

Reports of Commissioner of Labor, issued annually.

Bulletins of Bureau of Labor, bimonthly.

Annual and Special Reports, Commissioner of Corporations.

Reports of Commissioner of Immigration, annually.

Reports on Good Roads, Division of Good Roads.

The American Year Book.

## PHYSICS

### ONE UNIT

The course in physics should continue during the entire school year of, at least, thirty-six weeks. A good general program to follow is to have three periods of, at least, forty minutes each of class discussion per week in which the teacher performs demonstrative

experiment and lectures, and quizzes the pupils upon previously assigned work. There should be two double periods per week for laboratory work though the teacher may find it necessary to use some of these laboratory periods for class work.

The field of physics is so broad and full that an elementary course cannot cover everything thoroughly. The pupil is likely to be confused by the rapidity with which he encounters new ideas. Each of the great divisions,—Mechanics, Heat, Magnetism and Electricity, Sound and Light should be covered; but the teacher must emphasize those portions which best fit the conditions of the school and vicinity. Of course, there are certain great principles which must be considered; but these will be emphasized by the text and the teacher should know them, so an enumeration will not be necessary. The teacher should demonstrate all the general facts and principles possible, remembering that these things are new to most of the pupils, and will make a better impression if concretely illustrated.

The general character of the work should lead the pupil to the observation and interpretation of the phenomena he sees about him. The inexperienced teacher is likely to make the course too technical and mathematical. While many simple concrete problems should be solved, the teacher must avoid making physics "applied mathematics." The pupils should be led to reason out the problem from the physical laws and principles, rather than to solve them by formulas. When formulas are used, the pupil should understand them, but the high school pupil cannot be expected to learn the derivation of formulas. In selecting mathematical problems, the teacher should choose, or make, concrete problems that have a practical significance. One class of practical problems should be those bearing on agriculture.

The selection of a text book is of great importance. The text should be thoroughly modern; one that does not over-emphasize mathematics; that shows the industrial application of the laws and principles; is not technical; and approaches the subject, as far as possible, from the pupils' viewpoint. All the good high school texts should be on hand for reference together with such other books as the school can afford to buy. At least one of the reference books should treat of the physics of agriculture.

Much of the apparatus needed can be made but most of the complicated pieces must be purchased. Considerable judgment must be

exercised by the person selecting these as the money may be poorly invested by inexperienced purchasers.

The laboratory work should consist of at least forty simple experiments chosen to illustrate or emphasize general principles or to teach observation and manipulation. The pupils should make a carefully written report of each experiment. When the double periods mentioned above are available, these reports should be written at once in the laboratory under the observation and direction of the teacher. The report should include a brief description of the experiment, a table of data and results, a diagram showing the arrangement of apparatus and a statement or discussion (depending upon the experiment) of the results. This note book may be called for with the examination papers by the examiner.

From the nature of the subject, the majority of the experiments will be quantitative. While the pupils should be expected to get reasonably good results, the teacher must remember that the object of high school physics laboratory work is not accurate physical measurement. The laboratory work should accompany the text work on the same subject.

The teacher should always bear in mind that the object of high school physics is not to make physicists, but to help the pupil to observe, understand and better fit into his environment.

REFERENCE,—

Cajorie, Florin.—History of Physics.

Duncan, R. K.—New Knowledge.

King, F. H.—Physics of Agriculture.

BOTANY

ONE UNIT OR ONE-HALF UNIT

The aim in biological studies in secondary schools is primarily to give the pupils an acquaintance with living things and the conditions which influence life processes. The time has come when knowledge of the activities of plants and animals and the part they perform in life is a part of the body of knowledge people must have in order to be intelligent as to their environment. The study of botany or zoology should provide training in seeing accurately, in thinking logically, and in correct expression.

The effort of the teacher should be to emphasize the importance of the study of *living* plants and animals. Field, laboratory, teacher

and text book should direct the pupil to the real animal or plant and its needs and environment.

There should be provided a well lighted room with some direct sunlight; water; tables at which pupils may sit comfortably with their note books, dissecting instruments, microscopes, etc.; plenty of specimens secured early; reagents and apparatus; apparatus for germination and growing-plant tests; text books and supplementary books. There should be time given to *field work* and this should be as carefully planned by the teacher and reported by the pupil as the work of any laboratory period. The field work, laboratory work and demonstrations by the teacher are for the verification of what is read by the pupils or told to the class by the teacher; hence, the reading should precede the laboratory work a day or two and both laboratory and reading should be followed closely by oral recitations accompanied by demonstrations. A loose leaf permanent note book should be kept in which shall be reported field, laboratory and demonstration work. This book should not be too extensive but should be logically and carefully done. As the drawing is for the purpose of securing accurate observation, the teacher must see that the pupil draws what he sees and that only. The drawings should be large and clear and made with sharp hard pencil or, perhaps better, with ink. The descriptions should be in ink. Copying drawings from books, etc., is useless. This note book may be called for by the examiner at any time. If two or three double periods can not be secured each week for laboratory work, eight single periods should be had,—four for laboratory and four for recitation.

#### OUTLINE FOR BOTANY

I. Introductory: (1) Universality of plants in regions at all favorable to their growth. (2) Relative number of prosperous plants in deserts and extremely cold regions. (3) Plants upon trees, rocks and in caves. (4) Dependency of man upon plants: food, food for his domesticated animals, clothing, shelter, medicine, paper, coal, covering of the earth. (5) Plants not primarily to serve man: timber, fruits, etc., for their own uses; plants must work to live; plants must have structures and materials with which to work.

II. The first two or three months, those of autumn, should be devoted to a *general view* of plant life,—the physiology of plants rather than their morphology and relationships. This can best be

done in these months because living specimens of algae, fungi, liverworts and angiosperms can be found with which to work: (1) The cell, cytoplasm, nucleus, plasmic membrane, sap cavity, wall. (2) Role of water in the plant, osmose, path of transfer, transpiration, turgidity. (3) Photosynthesis,—function of chlorophyll, carbon dioxide, evolution of oxygen. (4) Respiration,—necessity of oxygen in growth, evolution of carbon dioxide. (5) Digestion,—digestion of starch with diastase and its role in the translocation of foods. (6) Irritability. (7) Growth. Much attention must be given to demonstrations, and the relations of these processes to agriculture should be pointed out. Such demonstrations and studies as may be found in any elementary chemistry should be had early in this work to show the nature of oxygen, carbon dioxide, nitrogen, carbon, hydrogen, phosphorus, air, etc. In connection with the topics of this section, a general study and some detailed study of root, shoot and leaf should be made. Specimens of living algae and fungi should be used for demonstrations early in the work.

III. Life Histories: Algae, Fungi and Bacteria, Liverworts, Mosses, Ferns, Gymnosperms, Angiosperms. The life history of typical species of these great groups and some of their subdivisions should be studied in laboratory and recitation during the winter months, probably, and it may be necessary to use preserved specimens. Have fresh specimens, if possible. An understanding of the theory of organic development, of reproduction, of morphology, of alternation of generations, and of the difference between a spore and a seed should be secured.

IV. Plant Tissues: A more detailed study of histology and functions of root, shoot and leaf of angiosperms than was made in Section II. This can be done in winter.

V. Angiosperms continued: Seeds,—germination. Review physiology of young plant. Forms of stems and leaves. Flowers. Legumes as nitrogen gatherers.

VI. Plant Diseases: Crops. Organisms that produce diseases. Seed treatment. Spraying. Disinfection. Diseases of animals caused by plants. Bacteria, yeasts and molds.

VII. Plant Environment: Physical and chemical conditions affecting plant growth, soils, water, plant foods, air, light, heat, etc. Relation of plants to each other and to animals.

The vicinity, nearest coulee, pond and lake should be searched for specimens. Some material may be secured in cultures in the labora-

tory. Some may be had from the Agricultural College. Some from the University. Address Dean Brannon, University, N. D. Preserved material may be had also from the Cambridge Botanical Supply Co., Cambridge, Mass., and from the Woods Holl Laboratory, Woods Holl, Mass.

The Compound microscopes should have two objectives, a double nosepiece and a one-an-one-half-inch eyepiece. A satisfactory instrument may be had for \$30 to \$33. A sufficient number of dissecting microscopes should be supplied. A satisfactory instrument costs \$1.75 to \$2.50.

Half-unit course: For a half-unit course in botany the above outline is to be followed except that sections III. and IV. must be omitted.

REFERENCE,—

- Atkinson, Elementary Botany.
- Bailey, First Lessons in Botany.
- Conn, Story of Germ Life.
- Coulter, Plants.
- Newell, Part I., From Seed to Leaf.
- Pinchot, Primer of Forestry. *Free.*
- Sharpe, Laboratory Manual in Biology.
- Stevens, Introduction to Botany.

## ZOOLOGY

### ONE UNIT AND ONE-HALF UNIT

The general statements as to aim, method, material and equipment made under the head of botany in this manual apply here; for both courses are biological. It might be repeated, however, that there should be: (1) A systematic study leading to an acquaintance with representatives of the chief groups of the local fauna; to a knowledge of the elementary principles of adaptation, interdependence, distribution, protection and preservation, and of the relation of animals to human activity (ecology and economic zoology); there should be (2) training in the laboratory and in the field in making observations according to the latest scientific methods, and in recording these observations in the form of drawings and notes; there should be (3) interpretation of the structures and other observed facts in physiology and in the light of the theory of organic development.

More attention should be given to external form, life history, behavior and habits, environment and economic value of animals than to the details of their anatomy; but some careful work in dissection must be done, if processes and relationships are to be understood. This study should result in a normal mental attitude regarding the treatment of animals.

Type forms should receive special attention under the following or similar heads:

I. Grasshopper: (If for the first work a larger specimen is desired, attempt section V. or section IX. first). Locomotion, method of feedings, etc should be observed. The organs (wings, legs, skeleton, muscles, mouth parts, digestive tract, breathing pores, nervous system, vascular system, eyes, etc.) should be studied. Of all of this carefully made notes and drawing should be taken. The notes should be brief. A sufficient supply of suitable equipment is assumed.

The physiology of the insect should be studied,—use of skeleton, muscles, digestive tract, and other organs and systems. Reproduction and the life history of the insect should receive attention. Man's economic interest in the insect.

Study locomotion, manner of feeding, other habits, external appearance, life history, and man's economic interests, as found in other insects. Learn common names and general appearance.

II. Amoeba: (If the amoeba can not be had conveniently, some other protozan). Study locomotion, feedings, digestion, assimilation, reproduction.

III. Earthworm: Study condition in garden or vacant lot. Economic interest. Appearance, and what is a healthy condition of the epidermis. Movements and means of same. Structure. Physiology. Reproduction. Other worms.

IV. Hydra: Habitat. Manner of feedings. Simple structure and corresponding crudeness of physiological processes. The hydra offers one of the best opportunities to study the cell. Hydroids.

V. Crayfish or lobster: Habits, Environment. Structure. Physiological processes. Men's economic interests.

VI. Sea-urchin or starfish: Two or three days should be spent on one of these,—the one of which specimens can more easily be secured. Habits, structure.

VII. A sponge: One or two days should be devoted to sponges. Behavior, habits and environment. Structure. Economic interests.

VIII. Mussel: Study the mussel or the clam in its natural condition, if possible. Locomotion. Feeding. Structure. Physiology. Low form of structure and crude functioning of organs,—low form of life. Production of calcarious shell. Reproduction. Other mollusks,—appearance and common names. Economic interests to man.

IX. A fish (the perch): Make as complete a study of the fish as has been suggested in section III. for the earthworm. Study ecology and economic value of other fish.

X. The frog: As complete a study of the frog should be made as has been suggested in section I. for the grasshopper. Anatomy and physiology should be emphasized.

XI. The pigeon: The study of the type form of birds should be as complete as is suggested for the study of the clam, section VIII. The details of what to do can be found in any good laboratory manual for zoology.

XII. A mammal (the rabbit): The outline followed should be as complete as that for the pigeon.

In the study of the above sections, as occasion may demand, explanations of conditions observed should be made in harmony with the theory of organic development. Two double periods per week should be devoted to field and laboratory work. In this is half the value of the course. The ability on the part of the pupil to observe and think independently is especially desired. An elementary training in both experimental and comparative methods should be sought, and the peculiar value of such training as a means of intellectual development should not be overlooked.

Each section should receive its proper attention in the note book. These notes should not be voluminous, but accurate, pointed and well stated. Drawings are an important part of the note book. The examiner may call for the note book as part of the test.

Early in the course a limited knowledge of the most common chemical elements should be gained. Material for work in zoology may be had by addressing Dean Brannon, University of North Dakota, University N. D., from the Agricultural College of North Dakota, at Woods Holl, and at Cambridge.

HALF-UNIT COURSE:—If a half-unit course is desired, sections III., IV., V., VI., VII. and VIII. must be omitted.

REFERENCE,—

Chapman, *Bird Life*.

Jordan, Kellogg and Heath, *Animal Studies*.

Linville and Kelly, *General Zoology*.

Sanderson, E. D., *Insects Injurious to Staple Crops*.

## PHYSIOLOGY

### ONE-HALF UNIT

Early in this course a limited knowledge of what oxygen, hydrogen, carbon, nitrogen, phosphorus, carbon dioxide, air, etc., should be gained by means of demonstrations, reading and oral instruction.

Avoid by every effort so treating the subject as to create the impression in the minds of the pupils that the subject of physiology is a book subject only. Let the work be *physiology* and *hygiene* rather than anatomy.

Each pupil in the class will keep a well ordered notebook in which he shall be required to keep a systematically written record, in descriptions and drawings neatly done, of the experiments performed and demonstrations or dissections wrought. These records must state clearly the purpose of the experiment, demonstration, or dissection, must describe the material and apparatus used, the procedure adopted to bring out the results sought, and the results themselves as learned thereby. Where an experiment is performed with apparatus, the well executed drawing of the apparatus as set up is to constitute a part of the record thereof, and these notebooks may be demanded by the examiner as partial evidence of the character of the work done in the subject. This book should contain at least twenty representative laboratory exercises. This must be as truly a laboratory course as in physics or botany.

### OUTLINE.

I *The Cell*.—Kinds of cells; sizes and shapes of cells; cell walls, protoplasm (cytoplasm), protoplasmic membrane, nucleus, nucleolus; irritability of protoplasm; why water is necessary to protoplasm; mobility of protoplasm; what is meant by cell structure; intercellular material; how cells multiply; how they get food and use it; one celled plant or animal; tissue as a group of like cells; different kinds of tissues; organs and functions; the complex individual body as composed of cells grouped into tissues and of tissues grouped into organs; division of labor and its advantages.

Suggestion: Microscopic examination of nitella or of a leaf of elodea will show circulating protoplasm very beautifully. Proto-

coccus, amoeba, or paramecium will illustrate the one celled body. A little scrapings from the inner side of the lip will afford abundant view of the dead, flat cells of the outer skin.

Other topics to be treated in a similar manner are: (2) Structure of Tissues. (a) Gross Structure. (3) The teeth. (4) Food. (5) Digestion of Foods. (6) Absorption. (7) Circulation. (8) Assimilation. (9) Respiration. (10) Excretion. (11) Nervous System. (12) Skin. (13) Special Senses and Voice. (14) Hygiene of exercise, cheerfulness, hopefulness, clothing, ventilation, light, sunlight, proper care of voice, habits and their economy and danger. (15) Bacteria,—useful and detrimental. (16) Other topics suggested by leading texts.

Detailed outlines of these topics seem to be unnecessary, as any good text gives them.

Physical education should receive attention in connection with this course. Proper dress, exercise, rest, breathing, bathing, posture, gait. Care of the scalp, nails, teeth, eyes, nose, ears. How to avoid colds. Sex hygiene should have its share of attention; but not in mixed classes or by an instructor of the opposite sex. If the superintendent and board of education approve of it, a medical practitioner might be called in to give one or more lectures in this subject to divisions of the class.

Means of preventing and curing tuberculosis and preventing contagious diseases such as typhoid fever, should receive attention.

**REFERENCE,—**

Colton. *Physiology: Experimental and Descriptive.*

## CHEMISTRY

### ONE UNIT

The course in general chemistry should extend through the year, two or three days a week being given to laboratory work and the other days to recitations.

It is desirable to have a double period for the laboratory, but if it is not possible to make a daily program that will secure this arrangement then the subject may be placed at the end of the session so that when necessary, the pupils may remain a few minutes after the close of school to finish their experiments. A large number of experiments in elementary chemistry can be performed during the year with even forty minute periods, if the students find everything in readiness when they enter the laboratory.

There are several text books which cover about the proper amount of work and which are well adapted to the course in elementary chemistry.

There should, of course, be on hand, for reference, a few standard books which treat various phases of the subject more comprehensively than the text book can do.

In the study emphasis should be laid upon the properties of the elements and their chief compounds, especially those of most common occurrence and general use. This, of course, includes the chemical action of elements and compounds. Chemical theories should be clearly brought out but should not be given too much time. At the proper place, early in the course, the student should be taught to express chemical reactions by equations, and this should be required for nearly every experiment. Most text books give detailed directions for experiments, but if not a laboratory manual should supply the need.

Neat and accurate statements of all experiments should be recorded systematically showing *the object, the method, the results, special observations, equations*. These records should be kept in a special note-book or in the manual if that provides sufficient space for the purpose. By this means systematic habits of work, accuracy in observation and inductive methods of thought should be cultivated. Skill in manipulation as well as accuracy of work and statement should be required. It must be remembered that chemistry is an art as well as science.

The examiner reserves the right to require that the note-books be sent to him together with the student's examination papers.

The laboratory work of the class should be supplemented by numerous experiments performed by the teacher. This is especially important with experiments which are very difficult or are dangerous for a beginner.

The essential considerations in the teaching of chemistry are well summed up in the following extract from the report of the committee on chemistry for the Commission on Accredited Schools and Colleges of the Association of Colleges and Secondary Schools of the North Central States.

I. "Technique of experimentation.

Properties of common apparatus in respect to structure and material. For example, how to make an apparatus air-tight and why.

Object of such operations as washing and drying gases and how the object is attained.

Physical properties which may be used for recognition of each substance and for explanation of all observations.

Judicious use of proportions and materials. Influence of conditions (temperature, homogenous and heterogenous mixtures, etc.) on chemical change.

2. Physical phenomena, their recognition, description and physical interpretation.

3. The more strictly chemical application of the results.

For example inference in regard to the nature of the chemical change which must have led to the results observed. Making the chemical equation from adequate data.

The material basis for the above may be found for the most part in the employment of a restricted number of elements and a few of their compounds. Facts should be simplified and systematized by generalization, and generalizations ("laws") should be illustrated and applied to familiar things. The usual theoretical explanations should be given as facts accumulate. Laws and theories derive their importance from the fact, not vice versa, and none should be given unless and until the corresponding facts have been encountered in laboratory or class-room experiments."

An equipment for an elementary course in chemistry need not be very costly. A list of the apparatus and chemicals needed and directions and drawings for arranging laboratory tables, sinks, water supplies, etc., where water and gas are not available, have been prepared by Professor E. J. Babcock, College of Chemical and Mining Engineering of the State University, and will be furnished by him free, on application.

The subject of chemistry lies at the foundation of so many industries and activities of daily life and is so essential to a proper understanding of other sciences that it should be taught in every High School and generally elected by the pupils.

REFERENCE,—

Brownlee and others, *First Principles of Chemistry*.

Duncan, R. K., *Chemistry of Commerce*.

## PHYSICAL GEOGRAPHY

### ONE-HALF UNIT

The time devoted to physical geography should be at least one semester of eighteen weeks, five recitations a week. It is recommended that at least one double laboratory period a week be substituted for one of the recitation periods, and that field work be given in place of laboratory work in early autumn and late spring.

It is further recommended that a full year be devoted to the subject rather than a half year each to physical geography and geology except in cases where the teacher is unusually well prepared to teach the latter subject and the locality offers special advantages.

The outline given below includes the larger topics to be covered. Each topic should be developed to show causes of the physiographic facts and their consequences in relation to life, especially to man. Laboratory study should accompany and illustrate the work in text and recitation. In view of the number of excellent manuals it is inadvisable to attempt to outline that work here. Note-books should contain a carefully written record of all laboratory work and written reports on all field trips. Conference time for discussion of these records and reports is advised.

Of the four general sub-topics presented especial emphasis should be placed on the fourth—the Lands. The others should be treated briefly and from the standpoint of their relation to the lands.

### OUTLINE

Introduction: The science of geography, physical geography. Relation to other sciences.

#### I. THE EARTH AS A WHOLE

Shape: Evidences, consequences.

Size: Measurement, relation to man.

Motions: Rotation; evidences, consequences—day and night, direction, relative position, latitude, longitude, time, life effects.

Revolution: Evidences, rate, path, direction, seasons and other effects.

Magnetism: Compass, poles, variations.

Map Projection: Explanation of.

## II. THE ATMOSPHERE

Composition and offices.

Temperature: Source of heat, variations, relation to life, expression by isotherms, isothermal charts, thermometers and the thermograph.

Pressure: Measurement, barometers and the barograph, determination of altitude, relation to temperature, isobaric maps, distribution of pressure.

Circulation: Winds, methods of observation, classification, causes, effects.

Moisture: Sources, transportation, measurement of humidity, conditions and forms of precipitation, clouds and their causes, rain and snow, dew, frost and fog, hail and sleet, relation to moisture and precipitation to life.

Storms: Cyclones and hurricanes, character, path and rate of North American cyclones, relation to general weather conditions, seasonal weather maps and weather forecasting.

Rainfall: Measurement, distribution, relation to winds, relation to life.

Weather and Climate: Relation of weather to climate, relation of both to life and human industries, the work of the Weather Bureau.

## III. THE OCEAN

General discussion: Distribution, form and depth of the ocean; composition, density and temperature of the ocean waters; source, composition and distribution of sediments on the ocean floor; the life in the ocean.

Movements of Ocean Waters: Waves, cause, motion and effects; Currents, causes and consequences, effect on climate and life. Tides, character of motion and causes, variations and their causes, effect on navigation, harbors, etc.

Work of the Ocean: On floor and shore. Economic products.

## IV. THE LAND

Distribution: The interpretation and use of contour maps.

Changes in Land Form: Elevation and depression; erosion, transportation and deposition; the cycle of erosion.

Classification of Land Forms: According to origin and to stage in physiographic cycle.

Plains: Classification, coastal plains, alluvial plains, lake plains and plains of erosion, culture relations of plains.

Plateaus: Relation of plateaus to plains and mountains, young plateaus, dissected plateaus, old plateaus, broken plateaus, life conditions on plateaus.

Mountains: Classification, block mountains, folded mountains, domed mountains, complex mountains, life conditions in mountains.

Volcanoes: Distribution, history of volcanic courses, influence on topography and on life.

Rivers and Valleys: Ground water; life history of rivers by physiographic stages; revived and dismembered rivers and drowned valleys; the work of rivers; importance of cultural relations.

Glaciers: Nature of glacial ice, conditions necessary for formation, types of glaciers, the work of glaciers, ancient glaciers and ice sheets, contrast of glaciated and not glaciated regions of North America, economic importance of glaciation in the United States.

Lakes: Distribution, relation to rivers, effect on climate, relation to life, the origin of lake basins and the life history of lakes.

Shore Lines: Ocean and lake, forms of elevation and depression, modification by waves, currents and rivers, culture relations of shore lines.

## ELEMENTARY GEOLOGY

### ONE-HALF UNIT

This outline includes the larger topics which should be presented in a half year's course in Geology, with five recitations a week. Field work should be given in place of several of these recitations in early autumn or late spring.

It is advised that this subject be not given except in high schools where the teacher is unusually well prepared in the subject and the locality offers special advantages or a suitable museum is provided. Under ordinary conditions the expansion of physical geography to a full year's work is preferred.

### OUTLINE

Introduction: Meaning and scope of geology and relation to other sciences, the geologic processes and agents.

#### I. PHYSICAL GEOLOGY

Composition of Earth: The atmosphere, the hydrosphere, the lithosphere.

Materials of the earth's crust: Minerals; rocks; igneous sedimentary, and metamorphic, mantle rock.

Original Structure of the Rocks: Igneous, sedimentary.

Structure Due to Movements: Warping, folding, jointing, cleavage, unconformity.

Alteration of the Rocks: Weathering, cementation, metamorphism.

The Work of the Atmosphere: Weathering, effects of heat and cold, frost action, work of plants and animals; mechanical work, transportation, deposition; chemical work, oxidation, hydration, carbonation.

The Work of the Ground Waters: The ground waters, movements of ground waters, springs and wells, mechanical work, chemical work.

The Work of Streams: Erosion, weathering, transportation, corrosion, deposition; valleys; the cycle of erosion, stream deposits.

The Work of Glaciers: Characteristics of glaciers, snow fields and ice fields, valley glaciers, Piedmont glaciers, ice sheets, ancient glaciers; the work of glacial ice, erosion, transportation, deposition; the work of glacial waters; glacial deposits.

Land Forms: Plains, plateaus, mountains.

## II. HISTORICAL GEOLOGY

The History of the Earth: Geologic and human history; fossils and their uses, divisions of geological time.

The Origin and Development of the Earth: The solar system; theories of origin, the nebular theory, the planetesimal theory.

A survey of historical geology:

Archaen Era.

Algonkian Era.

Paleozoic Era.

Cambrian Period.

Ordovician Period.

Silurian Period.

Devonian Period.

Carboniferous Period.

Mesozoic Era.

Triassic Period.

Jurassic Period.

Cretaceous Period.

## Cenozoic Era.

Tertiary Period.

Quaternary Period.

Glacial Epoch.

Recent Epoch.

## BACTERIA, YEASTS AND MOLDS

## ONE-HALF UNIT

This study is introduced into the agricultural and domestic science courses because of its close affiliation with the basic ideas of these subjects. The study of sanitation, prevention of disease, theories of the origin of disease, etc., is of fundamental importance to all classes of students.

For the student of domestic economy, the course should include more particularly:

- (1) Microorganism as a whole, their uses as well as their dangers.
- (2) a. Molds; common types occurring in the household such as *Pencillium*, *Aspergillus*, *Mucor*, *Cephalothecium*. Simple form and structure (morphology and histology) of these forms.
  - b. Occurrence of such molds in the home on such foods as bread, cheese, fruits, etc. Changes, both chemical and physical produced by such molds.
    - c. Preservation of such foods from molding, by canning, cold storage, sulphuring, etc., with examples.
    - d. Factors favoring mold growth with practical examples of economic importance (light, heat, moisture, etc.)
  - (3) a. Bacteria, form, size, method of motion, growth. Physical and chemical factors favoring bacterial growth.
    - b. Saprophytic bacteria, disintegration products of fermentation, decomposition, ptomaine formation, vinegar manufacture, cheese and butter "tastes," necessity for garbage disposal, preservation of foods from bacterial action with distinctions from (2c). Preservatives, harmless and poisonous, with examples.
    - c. Clean milk. Structural reasons for its early decomposition by bacteria. Precautions necessary to be observed for the production of a clean product. Pasteurization, its favorable and unfavorable points.
    - d. Parasites, toxin formation, virulence and attenuation. Methods of exit from patient, of transportation from host to host. Meth-

ods and channels of infection with examples. Specific carriers of disease, water, milk, insects, air and dust, "carriers."

e. Water supplies: Farm springs and wells. Precautions of construction of a well, such as casing, curbing, cover, drainage, etc. City and town water supplies, artesian wells, impounding reservoirs, filters and bacteriological precautions to be observed in each.

f. Immunity, antitoxin formation, opsonins, vaccines with explanations in simplified language.

g. Fumigation and use of antiseptics and germicides. Efficient methods of use of the various agents is to be emphasized.

(4) a. Yeasts, morphology and structure growth.

b. Uses, fermenting agent for alcohol production and raising of bread. Action of yeast enzymes on carbohydrates, diastatic, inverting and zymatic.

c. Unfavorable action of yeasts on sugar solutions such as jellies.

d. Methods of testing yeast activity and use of pure cultures.

For agricultural students the course should be complemented or altered to fit the class. Almost all of the above outline will be useful. The following, however, should be added or substituted in its proper place:

1. Bacteriology of soil. The nitrogen cycle with its various activities such as demtrification, humus formation, ammonia formation, nitrification, etc. Legume nodules, soil inoculation, its benefits and reasons for failure to act apparently. Zones of depth as regards bacterial growth in soil. Numbers of bacteria in soil.

The sulphur and carbon activities of soil forms.

(2.) Mycology of higher plants and soil. Meaning of plant pathology and soil "sickness." Instance of plant diseases such as scab of potatoes, wilt of flax, rust of wheat, etc.

It should especially be emphasized also that technical terms are in so far as is practicable, to be substituted by simpler forms of wording for this course. This subject can be made either very dull to this class of pupils by use of strictly technical phrases, or extremely live and interesting by popular language.

#### REFERENCE,—

Conn, Agricultural Bacteriology. P. Blakiston & Co.

Conn, Practical Dairy Bacteriology. Orange, Judd & Co.

Jordan, Manual of Bacteriology. Saunders & Co.

Lipman, Bacteria in Relation to Country Life. Macmillan Co.

Prudden, *Dust and Its Dangers*. Geo. Putnam's Sons.  
Prudden, *Story of the Bacteria*. Geo. Putnam's Sons.  
Prudden, *Drinking Water and Ice Supply; Their Relation to Health and Diseases*. Geo. Putnam's Sons.  
Marshall et al., *Microbiology*. P. Blakiston Son & Co.  
Conn, *Bacteria, Yeasts and Molds in the Home*. Ginn & Co.

## AGRICULTURE

The courses in botany, zoology, chemistry, physics, physical geography, elementary geology, bacteria, yeasts and molds, etc., may be given an agricultural viewpoint and this should be done where it is desired to offer in the high school more than a general view of agriculture.

The unit in agriculture mentioned below has been outlined with the hope of giving the subject organization and unity, and with the further hope that it may be pursued profitably by pupils in any year in the high school. Where more time than is required for this unit can be given to the general subject of agriculture, it is urged that two or more units of the work in the sciences mentioned above be done by the pupil before the unit in agriculture is attempted. This should make possible more thorough work in the latter unit.

### ELEMENTS OF AGRICULTURE

#### ONE UNIT

*The Plant*.—Economy of the plant to man. Factors necessary to growth of plants. Composition of plants. Ten chemical elements necessary to growth of plants. Parts of a plant with functions of each part. Propagation of plants. Plant enemies.

*Study of Special Plants*.—Wheat. Corn. Legumes.

*Horticulture and Forestry*.—Fruits. Farm garden. Forestry. Landscape gardening.

*The Soil*.—Nature and composition of soils. Capillarity. Soil water. Soil air. Soil temperature. Humus in soil. Cultivation of soil. Soil organisms.

*Special Classes of Animals*.—Horses. Cattle; Dairying. Swine. Sheep. Poultry.

*Animal Nutrition.*—Food principles. Feeds and feeding.

*Farm Management.*—Farm accounts. Machinery. Buildings. The farm home. Farm labor. Improvement of social life.

**NOTE.**—A syllabus giving full details about this course will be furnished upon application to the High School Inspector.

## HORTICULTURE

ONE-HALF UNIT

Horticulture is related to both botany and agriculture, but in both science and practice it differs from each.

As a science, horticulture deals particularly with plants as related to heat, light, moisture and plant food and also with plant improvement through crossing and selection.

As an art, horticulture deals with the many kinds of plant manipulation, such as, transplanting, pruning and propagating in its many forms.

The agriculturist treats his plants as a crop or en masse.

In horticultural practice, the individual plant generally receives consideration.

The horticulturist aims to exercise a more perfect control over his plants than is possible in most lines of agriculture.

Among the things he seeks to attain, are: Size, earliness, fruitfulness, quality and ornamental effect. The methods by which these objects are attained should constitute a large part of the instruction in horticulture.

The work may be done through the means of lectures and text books with a sufficient amount of observation to fix the points well in mind.

The following general topics will receive attention:

The order in which they should be taken up will depend upon the time of year in which the topic is studied.

First: *Germination.* The conditions necessary for germination and the means of obtaining such conditions in garden practice should be illustrated by concrete examples. Note the development of the plantlet as influenced by the amount of heat, light and moisture.

Second: *Roots.* Determine by experiment what conditions favor the growth of the roots of plants; study the different types of roots with reference to needs of the plants, and to the processes of transplanting.

Third: *Leaves.* Determine the relation between leaf development and fruitfulness what factors control leaf development?

Fourth: *Buds.* Note the difference between leaf buds and fruit buds. Note at what season of the year the fruit buds are formed and what treatment of the plant favors their development.

Fifth: *Plant Reproduction.* Note the different methods by which plants reproduce themselves and the advantages of each. Study all the different processes of artificial plant propagation. Practice grafting, budding, layering, etc.

Sixth: *Plant Cultivation.* Learn what fruit and vegetable crops can be grown in your locality and the necessary conditions for success.

REFERENCE,—

Bailey, Manual of Gardening.

Goff, Principles of Plant Culture.

Green, Vegetable Gardening.

Green, Fruit Growing.

MANUAL TRAINING AND DOMESTIC SCIENCE  
AND ART\*

Industrial subjects should be pursued by the pupils of the elementary grades in the form of paper cutting, weaving, clay moulding, braiding, basketry, freehand drawing, sewing, sloyd, etc. In the sixth and seventh grades the girls should do some systematic work in sewing, and in the eighth grade, a course in cooking. In the sixth, seventh and eighth grades the boys should do bench work, etc. The work in freehand drawing should continue through the grades.

*Definition.*—Manual training is defined by the Americal Manual Training Association as any form of constructive work that serves to develop the powers of the pupil thru spontaneous and intelligent self-activity. Manual training includes freehand and technical drawing; working in wood and metal; modeling in sand, clay or plaster; casting in plaster or metal; domestic science; cooking, dressmaking, pattern-making; printing; Swedish sloyd; Russian tool practices; etc.

*Purpose.*—Its purpose is to educate the *mind* thru the *hand*.

GRADE 7

*Time:* One hundred minutes a week in two periods.

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\*Syllabi on manual training and domestic science and art are being compiled by special committees; but it is probable that they will not be ready for mailing until August, 1912.

PROJECTS: *Woodwork*.—Simple construction involving the four principal cutting tools—saw, plane, chisel and spokeshave and the necessary laying out tools. Measuring, squaring, gauging, sawing, boring and doweling in making chiseling board and game board. Planing (surface and edge cutting board). Vertical chiseling, gouging, paring, sharpening chisel—making rack for brushes, tools or brooms and making pen tray. Bow sawing, modeling, sandpapering in making coat hanger, etc. Halving; nailing; finishing in making flower pot stand, bracket shelf, water wheel, etc., involving some form of groove joint.

#### GRADE 8

*Time*: Two hours a week in two periods.

PROJECTS: *Woodwork*.—Construction involving groove joint—towel roller and sleeve board. Exact work in planing, to make glue joint—bench hook, drawing board. Review of “form work” with more difficult modeling—hammer handle, canoe paddle. Mortice and tenon joint—taboret, plant stand, book shelves. Carving—book rack, ends carved from original designs, form of joint for ends chosen by pupils.

### ONE-YEAR COURSE IN WOOD WORKING FOR HIGH SCHOOL

ONE-HALF UNIT

This course will require one period a day for one year, and presupposes seventh and eighth grade work in manual training.

GROUP	PROCESSES	PROBLEMS
I—Review of the fundamental tool processes taught in the grammar school. Saw, plane, chisel and laying out tools. Grooved joints and halving.	I—Measuring, squaring, gauging, sawing, boring, chiseling, rules for planing, sharpening tools, planing cylinder, use of screws and nails, carving, finishing.	I—Bench-hook, specimens of wood for museum, book-rack, nail-box, tool box, towel roller.
II—More exact work in planing to make a glue joint.	II—Planing joints, gluing, clamping, surfacing, sandpapering.	II—Drawing board, T square
III—Construction by means of mortise and tenon joint.	III—Laying out duplicate parts, cutting mortise, testing mortise, sawing tenon, gluing and clamping, scraping, finishing.	III—Taborat, bookshelves involving keyed construction, stool, seat.
IV.— Construction involving the miter joint.	IV—Designing a frame for a given picture, planing parallel edges and sides in the construction of a miter-box, rabbetting, sawing the miter box, laying out and cutting a brace.	IV—Framing a picture bracket.

## SUGGESTIVE TREATMENT OF SOME OF THE ABOVE PROBLEMS.

Problem	Related Drawing and Design	Relation to Other School Subjects	Relation to Industry
Bench-hook	Working drawing to be made, or working drawing given to work from.	Botany—study of pine tree, how trees grow, sap wood and heart wood.	Lumbering— Logging, sawing, seasoning, Manufacture of nails —process, sizes.
Specimen of wood for museum.	Working drawing.	Botany—Study of selected trees, characteristics of different woods, classification of woods.	Forestry —Geographical distribution of varieties, trees studied, tree planting.
Book-rack	Design free-hand the contour of end and base; make designs for ends; make working drawing to scale and full size drawing of end, study of color of finish.		Furniture making — Selection of wood with reference to cost, ease in working, durability, finishing. Manufacture of sand paper — How made, grades.
Towel-roller	Working drawing. (Design may be made for back and ends.)	Geometry—To inscribe an octagon in a square.	Manufacture of screws —How screws are made, kind of screws for wood, sizes.
Drawing-board	Working drawing.	Botany—Study of annular rings in wood.	Cabinet making — Selection and use of wood with reference to shrinkage and warping. Manufacture of glue—What glue comes from and how refined.
T square	Working drawing.	Botany—Porous woods and closely-grained woods, ash and maple for example.	Instrument making — Selection of woods for smoothness and for holding of shape.
Stool	Free-hand sketch, constructive design, followed by working drawing.	Botany—Study of medullary rays in wood.	Mill work — Quarter sawing.

## DOMESTIC SCIENCE AND ART IN HIGH SCHOOL

Four half-unit courses are outlined.

The time required for a unit of credit is five double periods per week for thirty-six weeks. It is intended that Course I. in either domestic science or domestic art will be accomplished before Course II. in either is attempted. Domestic Science I. and Domestic Art I. may alternate with each other through a year of thirty-six weeks, or they may be done separately in succeeding semesters of eighteen weeks each. Domestic Science II. should follow or accompany, if possible, the high school courses in physiology, botany, bacteria, yeasts and molds, and chemistry. Domestic Art II. may be done at any time after Domestic Art I. is completed.

The work outlined under textiles is intended to be given with the sewing and in the same periods. The part dealing with vegetable fibres should be given with Domestic Art I. and that dealing with animal fibres with Domestic Art II.

In order to save time that will otherwise be lost in beginning and closing, all periods of work in domestic science and domestic art should be double periods.

### OUTLINE OF DOMESTIC ART

#### COURSE I. ONE-HALF UNIT

The outline of fabrics is intended to be given in connection with the sewing lessons after the class has begun a piece, then the teacher should discuss the fabric that is being used.

It is supposed that hand sewing has been given in the 7th and 8th grades of elementary school and that first instruction is given in machine sewing in the high school.

**INDIVIDUAL EQUIPMENT.**—Sewing apron; scissors, sewing bag; needles, Nos. 7 and 8; emery ball; thread, 60 and 70. **NOTE:**—By assessing each member 5 cts. thread can be purchased and left on machines.

#### CLOTHING

Drill the class on the threading, winding of bobbins, oiling and cleaning of machines, use of attachments. Never allow a class to use machines until these class instructions have been given. Use of paper patterns or simple tape and rule method of drafting.

**Underwear.**—Muslin petticoat, trimmed. Materials: Cloth: kinds, long cloth, Lonsdale cambric, Berkley cambric. Trimming:

kinds, embroidery, width, not to exceed  $\frac{1}{3}$  the length of skirt, or lace insertion and edge. Comparative value of lace and embroidery. Quality, use of embroidery of same quality as other trimming. Methods of application: under tuck, under bias folds, under finishing braid. Thread No. 60.

Pattern cutting. Economy of material; accuracy in placing patterns. Basting. Accuracy.

Seams: Plain, French, felled.

Button holes: Finish end with bar.

Plackett: Length, width, lap, method.

*Drawers*.—Material: Quality, kind, same as for petticoat.

Pattern: Cutting, basting seams, plackett, band, buttonholes, —see outline for petticoat.

*Corset Cover*.—Material: Kind, plain as for petticoat, barred or striped dimity, dotted swiss, or embroidery.

Pattern: Seamed, seamless; adapt style to figure of wearer.

Thread, No. 70. For other details, see petticoat.

*Nightdress*.—Materials: Quality, same as petticoat. Quantity, twice the length from shoulder to floor, adding length of sleeves.

Trimming: Lace or embroidery to correspond with petticoat.

Sleeves, placing of seams.

*Millinery*.—Points to be considered: Making of wire frame, covering with braid, trimming; size, style and shape adapted to wearer; color suitable for occasion and suitable to complexion of wearer.

When classes are large, the teacher should furnish a full and complete description of method of procedure so that it will not be necessary for individuals to wait for attention.

## COURSE II. ONE-HALF UNIT

*Shirt Waist*.—Kind: Tailored. Tape measure. Draft to common measure; draft to individual measure. Cut and fit. Materials: Suited to season; cotton would be best for first waist. Color: Suited to yearer. Style: Suited to wearer, not too complicated. Sleeve: Placket.

*Skirt*.—Pattern: Draft; length, suitable to age of wearer. Material: Woolen skirt, to match waist. Plackett; finish of bottom; finish of seams; finish of band; sewing hooks and eyes; making of loop hangers.

*Thin Dress*.—If in fourth year of course, graduating dress could be made. Materials: Swiss, dotted or plain lawn, batiste, organ-

die, mull, India linen. Pattern, paper. Style to suit the figure of wearer. Trimmings, lace or embroidery of quality to suit material. Method of applying lace insertion. Cutting and fitting. Fastening. Buttons and button holes. Thread, No. 80, 90, or 100, according to quality of material.

In all the garments, an accurate account of the cost of materials should be recorded.

## OUTLINE FOR TEXTILES

### I. STUDY OF FIBERS

#### A. Classification of Fibers.

##### 1. Vegetable fibers—

- (a) Cotton: Distribution of plant; (2) cultivation and its influence on quality of fiber; (3) steps in handling,—(a') picking, (b') ginning, (c') baling, (d') marketing; (4) appearance under microscope and characteristics of fibers; (5) varieties of cotton.
- (b) Flax: (1) distribution; (2) cultivation; (3) treatment,—(a') rippling, (b') retting, different methods, (c') breaking, (d') scratching, (e') hackling; (4) characteristics of fiber; (5) comparison with cotton as to (a') physical characteristics, (b') wearing qualities, (c') cost.
- (c) Minor vegetable fibers—Ranne, jute, hemp, pineapple fiber, and vegetable sink; production of each; characteristics of fiber; its comparative cost.

##### 2. Animal Fibers—

##### 1. Vegetable Fibers—

- (a) Wool: (1) Varieties of sheep; (2) effect of breed, climate and food on quality of wool; (3) preparation of wool,—(a') shearing, (b') sorting, (c') scouring, (d') marketing; (4) characteristics of fiber; (5) value for clothing.
- (b) Minor animal fibers: Camel's hair, alpaca, Angora goat hair; characteristics of each and use.
- (c) Silk: (1) History of silk production; (2) study of silk worm and stages in its metamorphosis; (3) treatment of cooon,—(a') baking, (b') reeling, (c') tying, (d') marketing; (4) characteristics of silk; (5) comparison with other fibers as to (a') length, (b') characteristics, (c') cost, (d') wearing qualities, (e') comparative loss in cleaning.

**II. SPINNING.**

- A. Primitive methods and development of spinning processes.
- B. Modern methods, including all the processes,—(1) opening and picking, (2) carding and combing, (3) drawing, (4) spinning.

**III. WEAVING**

- A. Primitive methods. Development of (1) heddle, (2) shuttle, (3) reed.
- B. Modern machinery and methods.
- C. Weaves: Plain, rib, basket, twill, and sateen. Cloth in which each is used.

**IV. LATER PROCESSES.**

- A. Bleaching: Methods used.
- B. Dyeing: (1) History of dyeing; (2) dyes,—(a) natural, (b) artificial, (c) comparison as to (a') fastness of color, (b') effect on cloth; (d) use of mordants, (e) steps in dyeing.
- C. Printing: (1) Primitive methods and development of printing processes; (2) modern methods.
- D. Finishing: (1) Of cotton, linen, wool, and silk; (2) methods of producing various effects through finishing.
- E. Fabrics: Study of names of cotton, linen, wool and silk textiles. Production of each and characteristics. Selection of materials suitable for different purposes considering,—(1) texture, (2) color and design, (3) wearing qualities, (4) cost.

**V. PRACTICAL WORK**

- A. Dyeing.
- B. Laundering: (1) Effect of heat, acids, alkalies, etc.; (2) removal of stains.
- C. Practical tests for fibers.
- D. Determination of adulterated products.

**OUTLINE FOR DOMESTIC SCIENCE****COURSE I**

It is suggested that all the theoretical work be given to the class while the food is in process of cooking. The teacher should endeavor to use foods in season. The outline appears in some places deavor to use foods in season.

*Fruits*.—Cookery.

*Kitchen*.—Laboratory rules; duties of housekeeper; supply table.

*Equipment*.—List, draw diagram of desk; contents; care.

*Refrigerator*.—Care; construction.

*Sinks*.—Care.

*Stove or Range*.—Care; diagrams; principles involved; drafts, etc.

*Ventilation*.—Necessity.

*Combustion*.—Definition; analogy between body and stove.

*Fruits Continued*.—Uses; preparation of fresh fruits; decay; selection care.

*Fruits and Vegetables*.—Methods of preparation; baking; boiling; steaming. Prepare apples and potatoes by the three methods. Note time required for the three processes.

*Cookery of Starches*.—Grate potato and prepare starch; test potato, turnip, carrot, cabbage, and other vegetables, also fruits with iodine. A blue color indicates presence of starch. Which ones contain starch? Examine starch under microscope, making drawings. Strain the above grated foods so as to get cellulose. Note the different amounts. Slice a potato and apple, put on blotting paper and weigh. Evaporate to constant weight. The difference between the two weights represent the amount of water. Cook tomatoes, sweet potatoes, sweet corn, cabbage, onions.

*White Sauce*.—Three methods of preparation; uses; (1) Creamed vegetables, (2) scalloped vegetables, (3) cream of vegetable soups, (4) spaghetti and tomato sauce.

*Cranberries*.—Cookery.

*Salted Nuts*.—(Cranberries and nuts used for Thanksgiving lesson.)

*Cereals*.—Test with iodine; study under microscope; cookery; time required; use of fireless cooker; explain principle of fireless cooker; cost of cereals; methods of serving.

*Sugar*.—Manufacture; cost; cookery; study temperature of different stages; Christmas candy; figure cost of home made and purchased candy.

*Eggs*.—Test with iodine, and nitric acid; heat and salt; structure; food value; preservation; care; cookery; soft cooked; hard cooked; poached; breaded.

*Milk*.—Test with iodine, nitric acid, heat, salt; care of milk;

cleanliness, milk inspection; cost of milk; food value; digestion; cookery. Scald and note temperature at which scum rises.

*Custards*.—Plain and floating island; application of experiment in temperature of cooking eggs; use of double boiler; disadvantages in allowing water to boil in the bottom part of double boiler; baked custards; blanc mange (substituting corn starch for egg thickening); use junket for junket pudding.

*Meat*.—Buying and caring for; test with iodine, nitric acid, hot water, cold water, add salt to water and test; structure; microscopic; cookery; methods; saute chops; boiling cheap cut; (use fireless cooker); roast; use of left overs; (hashed and creamed).

*Gelatine*.—Manufacture; use; proportion of gelatine to liquid.

*Cheese*.—Kinds; manufacture; cookery. Cheese fondue; macaroni and cheese; crackers and cheese.

*Batters and Doughs*.—Leavening agents; air; steam; eggs; baking powder; soda with sour milk; soda with molasses; yeast; cookery; pop overs; muffins; tea cakes; baking powder biscuits; shortcake; ginger bread; bread; (short process with yeast).

*Beverages*.—Test tea and coffee with iodine, nitric acid, ferric chloride; do you find starch or protein? Ferric chloride will precipitate the tannin. Tea: kinds; Coffee: kinds; chocolate, cocoa, sources of each; manufacture of above; cookery. Prepare tea and coffee in several ways, testing with ferric chloride to determine best method.

*Fruit Beverages*.—Frozen fruit juices.

*Ice Cream*.—Plain.

REFERENCE,—

Williams and Fisher, Theory and Practice of Cookery.

Snyder, Human Foods.

Wilson, Handbook of Domestic Science and Art.

COURSE II

Review of laboratory rules: Care of kitchen, sink; traps; definition for foods; classification of foods.

Carbo hydrates—

*Fruits*.—Composition; dietetic value; cost; preservation; sterilization; canning; preserves; jam; jelly; pickles; cookery for immediate use.

*Vegetables*.—Canning; corn, peas, beans, tomatoes. Vegetables:

classification; sources; composition; dietetic value; cost. Salads; kinds; vegetable; fruit; meat; cheese; salad dressing; French; boiled; mayonnaise.

*Cereals*.—Cookery; left over (use in puddings, compotes).

Proteins—

Classification; composition; food value; cost; cookery.

*Eggs*.—Scrambled; omelets.

*Meats*.—Food value; cuts; visit to market; methods of preparation; broiled; boiled and stewed; roast; saute; braized; pot roast; soup stock; cookery; porterhouse; chops; roast; ribs, etc.; meat pie; meat salad.

*Cheese*.—Souffle; rarebit.

(Teachers desiring to prepare salads from meats, eggs and cheese may introduce the same at this point instead of above.

Fats—

*Source*.—Composition; food value; digestion; cost; cookery.

Croquettes: direction for molding; direction for frying.

Use of left-overs in croquettes.

*Cake*.—Kinds; butter; sponge; formula for butter cakes standard and variations. Formula for sponge cake standard and variations. Method of mixing; method of baking. Oven temperature.

*Bread*.—Materials to be used; flour, yeast, liquid, etc.; methods of making, mixing, kneading, temperature. Baking: time, temperature, reasons for baking. Care of bread after baking; digestion of bread; nutritive value; comparison of home-made and baker's bread as to cost; as to quality. Visit a commercial bakery; judge bread, using score card; uses of stale bread; toast; croutons; crumbs. Prepare sandwiches.

Water—

*Beverages*.—review of tea, coffee, cocoa, chocolate, fruit drinks.

Compare dietetic value of each; compare important constituents; methods of preparation; physiological effects; dietetic value of each. Tests for tannin.

*Frozen Dishes*.—Value in dietary; methods of freezing; principles involved; construction of freezer; care of freezer. Improvise a home-made freezer. Use of fireless cooker in making frozen desserts without agitations. Classification of frozen desserts,—(a) with agitation; (b) without agitation.

**Planning of Meals—**

Balanced rations, nutritive values, market values.

**Serving of Meals—**

Setting the table; care of dining room; systematic management of kitchen; direction to waitresses; host and hostess. Serving of lunch; cost seven cents, ten cents per capita. Breakfast; seven cents, ten cents per capita. Dinner; seven cents, ten cents; fifteen cents per capita,—family dinner. Three course dinner, fifteen cents; five course dinner, twenty cents.

**School Lunches—**

Receptacles for packing; contents; packing; (use of parafine paper and paper napkins).

**Picnic Lunches—**

Contents; packing.

## MECHANICAL DRAWING

### FIRST ONE-HALF UNIT

The purpose of the Mechanical Drawing course in the first year of the high school is to teach the pupil to read and make working drawings and sketches, to give a knowledge of geometric construction, and to produce skill in the use of instruments by a drill in the making of drafting conventions.

**GROUP I**

Straight lines—Measurements, use of T square and triangles in drawing horizontal, vertical and inclined lines; conventional lines, free hand working sketches.

**PROBLEMS SUGGESTED**

Exercise sheets in lining, rectangular frame, triangular frame, try square, bracket, box and bench-hook.

**GROUP II**

Circles—Use of compasses, use of centre lines, cross-hatching sections, free hand working sketches.

**PROBLEMS SUGGESTED**

Exercise sheet, ring, circular picture frame, flower pot, cylinder head, circular box.

**GROUP III**

Tangents—Finding centres and points of tangency, free hand working sketches.

**PROBLEMS SUGGESTED**

Exercise sheet, torus, gland crank, face plate, bearing link.

**GROUP IV**

Construction of geometric figures using the three mechanical drawing views.

**PROBLEMS SUGGESTED**

Exercise sheets of geometric figures. Rectangular prism, hexagonal prism, pentagonal pyramid, triangular pyramid.

**GROUP V**

Free hand and mechanical lettering.—Emphasis on placing, form, slant, spacing, texture of line.

**PROBLEMS SUGGESTED**

Gothic alphabet and figures.



Plates

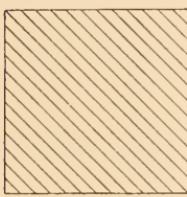
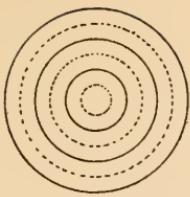
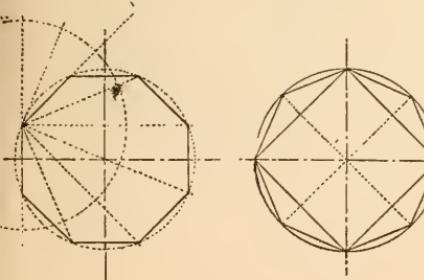
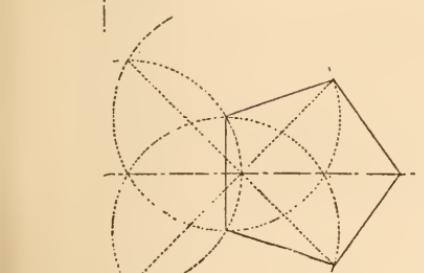
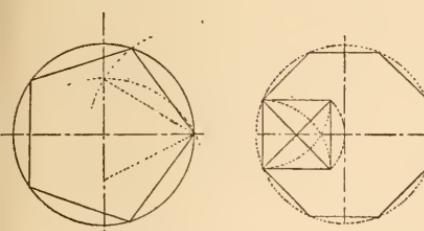
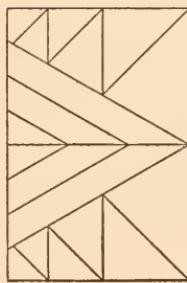
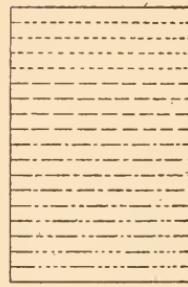


Plate. 4.



## MECHANICAL DRAWING

## SECOND ONE-HALF UNIT

The purpose of the Mechanical Drawing course in the second year is to produce better technique in drawing, to train the imagination and the power to visualize by teaching the fundamentals of projection.

## GROUP I

Working drawings of furniture.

## PROBLEMS SUGGESTED

Table, towel-ruler, chair, tabouret, stool, screen, cabinet, etc.

## GROUP II

Working drawings of machine parts.

## PROBLEMS SUGGESTED

Wrench, pulley, coupling, connecting rod, shaft bearing, bolts, screws.

## GROUP III

Isometric projection and cabinet projection.

## PROBLEMS SUGGESTED

Cube, cylinder, hexagonal prism, pentagonal prism, mortise and tenon joint, stool, saw-horse, shaft box. Making cabinet projection of some of the problems under group one.

## GROUP IV

Revolution of solids.

## PROBLEMS SUGGESTED

Cube, cross angle block, square pyramid, rectangular prism, triangular prism.

## GROUP V

Developments.

## PROBLEMS SUGGESTED

Prism, cylinder, pyramid, cone, funnel pan, pipe elbow.

## GROUP VI

Intersections.

## PROBLEMS SUGGESTED

Cylinder cut by prism, two cylinders of different diameters intersecting.

## REFERENCE,—

Problems in Mechanical Drawing, by Charles A. Bennett. The Manual Arts Press, Peoria, Illinois.

Course in Mechanical Drawing, Junior, Intermediate and Senior, by Thorne. The Williams Brown Earl Co., Philadelphia.

Elements of Mechanical Drawing, by Gardner C. Anthony. D.C. Heath & Co., Boston, Mass.

Applied Mechanical Drawing, by Frank E. Mathewson and Judson L. Stewart. The Taylor-Holdon Co., Springfield, Mass.

Notes for Mechanical Drawing, by Frank E. Mathewson. Manual Arts Press, Peoria, Ill.

The Essentials of Lettering, by Thomas E. French and Robert Meiklejohn. Manual Arts Press, Peoria, Ill.

Mechanical Drawing and Elementary Machine Design, by John S. Reid and David Reid. John Wiley & Sons, New York City.

### FREEHAND DRAWING

#### ONE-HALF UNIT

One year, forty to forty-five minutes a day, one-half credit.

The student should be able to draw the geometrical figures and all still life studies with intelligence as regards perspective and light and shade. He should have a knowledge of the drawing of flowers and plants both as regards their natural form and their use in design and decoration.

He should know the forms of different animals and be able to sketch any one of the common animals in an interesting manner. This may be learned by a close observation of animals from day to day and a study of the pictures of animals. He should have some experience in the sketching of figure poses showing different actions.

Every student should prepare a set of drawings made through the year to be graded in the final test. There should be twenty-five of these, ten of which should be design and decorative work. In estimating the collection such points as accuracy of drawing, good proportion, good placing, balance, rythm and harmony of coloring should be considered.

### VOCAL MUSIC

#### ONE-HALF UNIT

One year, thirty minutes a day, one-half credit. Much the greater portion of this time should be devoted to the ensemble singing of good songs. The material for this study should be taken from the leading operas and oratorios and other good music from our foremost composers. It is also urged that the best possible rendition of our standard hymns and patriotic songs be emphasized.

The examination should be written and oral. The written work will consist of the elements of notation, including the scale, both major and minor, key signatures, notes and rests of different lengths, intervals, terms as applied to musical expression, key board, etc.

The oral work will consist of sight singing and the recognizing of tones from dictation.

## PENMANSHIP AND SPELLING

### ONE-HALF UNIT

Very little if any writing should be done in copy books in high school. In fact, if an instructor is qualified to put the copies on the blackboard and direct the pupils in their practice, much better results may be obtained by the use of loose practice paper than with the copy book. The forearm, or "muscular" movement, should be cultivated and for this purpose the teacher and pupils will find a great deal of helpful material in such publications as the Penman's Art Journal, the American Penman, and The Business Educator.

The words in the exercises in spelling should be those commonly used in correspondence, in reporting and in business.

The examination of the high school board will require a specimen of the pupil's handwriting and the spelling of difficult words in common use with special emphasis on those used in business.

## BOOKKEEPING

### ONE-HALF UNIT

This course should include a thorough drill in the elements of bookkeeping and practice in the use of the more common books of accounting, such as the day book, journal, cash book, sales book, check book, ledger, bills receivable and bills payable book, and trial balance and statement book. Some single entry might be given, but most of the work should be done in double entry. Students should be required to fill out and become familiar with such business forms as invoices, notes, drafts, checks, receipts, statements of account, etc., and a system of instruction which requires these papers to be made out for the transactions entered in the books of account is to be preferred to one which does not require them.

### ONE UNIT

The full year course in bookkeeping should include, in addition to the work outlined for the half-year course above, advanced work in bookkeeping and business forms, either by independent individual sets for the pupils or by organizing the class into a community for business practice with some suitable guide for the transactions to be performed and the books to be kept. In the latter method care should be taken to hold the pupils strictly to the work in hand, and to a high standard in business forms and books of account, lest

time be wasted in useless "dickering." All transactions should be carried out by correspondence, thus reducing confusion to the minimum.

### COMMERCIAL LAW

#### ONE-HALF UNIT

The following from the report of the Commission of the North Central Association of Colleges and Secondary Schools will serve as a guide:

Study the legal principles governing business relations, especially contracts, their nature, essentials, and effects; further sales, interest and usury, bills and notes, agency, partnership, corporations, real property and mortgages, liens, attachments, surety and guarantyship, bailments, common carrier, banking, fire insurance, landlord and tenant.

Text book, supplemented by some study of cases (by way of illustration), discussions, and practice in drawing legal papers such as a contract, note, bill of exchange, bill of sale, bill of lading, power of attorney, deed, mortgage, lease, notice of protest, etc.

### COMMERCIAL GEOGRAPHY

#### ONE-HALF UNIT

The following is from the report of the committee on commercial subjects for the Commission of the North Central Association of Colleges and Secondary Schools and is adopted as the requirements in this subject:

As the history of commerce is concerned with the past of commerce, so commercial geography describes and seeks to explain the industry and commerce of nations today. It is "a comparative study of the nations of the world, their commercial prominence and their contest for the trade of the world."

The introductory work should cover: (1) the effect of surface, soil, climate, etc., that is, the physical factor of commerce; (2) the influence of race, religion, education, commercial policies, etc., that is, the human factor in commerce; (3) the effect of economic forces on production and commerce; (4) means of transportation and communication.

Following this should come a detailed study of the United States by sections and then as a whole, with reference to physical features, and climate, natural resources, population, leading industries, trans-

portation facilities and commerce, especially foreign commerce; then a study of the outlying possessions of the United States; and finally a survey of other important commercial countries from the same viewpoint.

The text book, supplemented by map work and assigned readings. For purposes of illustration, samples of commercial staples, lantern slides, stereopticon pictures, etc., should be freely employed; and wherever possible, visits of inspection made and informal lectures secured by experts in various industries. Should be preceded by physical geography.

### SHORTHAND.

#### FIRST UNIT—SECOND UNIT.

So much depends upon the system taught and the method of instruction in arranging this course that very little will be said about it here. Each of the leading systems has not only its text-book but reading and writing exercise books and books for use in dictation. The examination will include questions covering the principles of the system, and exercises to be dictated to the class and transcribed by them either on the typewriter or by longhand.

No credit should be given for work in shorthand unless the pupil takes typewriting in his course also.

For the one unit of credit the pupil should complete the principles of the system that he is studying, acquire a speed of 75 words per minute from dictation, and pass the required examination for this course. This work of 75 words per minute must be "absolutely correct;" i. e., that number of words must remain after deducting three words for each mistake.

For the second unit of credit, the pupil should acquire a speed of 500 words per five minutes, (absolutely correct work), and pass the examination for the second unit course.

### TYPEWRITING

#### ONE UNIT

In typewriting what is known as the "Touch" method is recommended. By this method the pupil learns to use all the fingers in operating the machine and keeps his eyes off the keys. A shield should cover the keys, and the operator's hands. A good one to fit any machine can be secured from the Chrisman Publishing Company of St. Louis. There are many good manuals for the teaching

of the touch method, advertisements of which may be found in any of the shorthand magazines. Some work in tabulating, billing and title paging should be given in the advanced part of the course.

The object is first, accuracy and second, speed, speed in taking dictation, copying and transcribing notes. Equally essential are correct spelling, capitalization, punctuation and paragraphing.

Thorough training should be given also in the care of the machine, and methods of copying, manifolding and filing papers.

The speed to be attained for a full unit of typewriting should be 35 words per minute from copy and 25 words per minute in the transcription of notes. This work should be "absolutely correct;" i. e., 35 and 25 words after deducting 3 words for every error. To accomplish this will require not less than two periods a day for one year, or one period a day for two years.

### PSYCHOLOGY, ELEMENTARY

ONE-HALF UNIT

This part of the course deals, in an elementary way, with the facts and theories of general psychology. Its aim is to introduce the pupil to a study of his own mental states as a preparation for the sympathetic and intelligent observation of the lives of others.

### PEDAGOGY, SCHOOL MANAGEMENT AND SPECIAL

METHODS

ONE-HALF UNIT

A discussion of the common problems of school management and of rational methods of teaching the various subjects found in elementary school programs. The class should, under the direction of the teacher, make frequent visits to the grade rooms to observe how the methods under discussion are put into actual operation. Pupils should make a full report of such visits. The observation work should be made an important feature during this semester.

### ARITHMETIC.—HIGH SCHOOL

ONE-HALF UNIT

The aim in this course is a thorough knowledge of the essentials of arithmetic. This course should result in accuracy, rapidity, neatness, a reason why, and the ability to state that reason in good English.

One-half of the time should be given to rapid oral work and to the statement of definitions and principles. Each written exercise should be done under a limit time and accurate work only should be accepted.

This course includes notation by the use of Arabic characters and Roman numerals; numeration,—the reading of decimal fractions through millionths at sight; a general discussion of reduction; scale as used in different phases of arithmetic; the fundamental processes in whole numbers, decimal fractions and in common fractions in which the denominator is 2, 3, 4, 6, 8, 12, and 16; the multiplier, abstract, etc.; aliquot parts and short methods in multiplication and division; statement of fundamental principles and definitions; daily rapid oral work in addition; tests of divisibility; factors; multiples; powers and roots of small numbers; commercial statements and commercial paper; time, circular, linear, square, cubic and capacity measures, avoirdupois weight; board measure; plastering, carpeting, etc.; the more elementary phases of longitude and time; the *three* cases in percentage,—to find any per cent. of any number,—to find a number when a certain per cent. is given,—and to find what per cent. one number is of another; reduction of any per cent. to a common fraction or decimal fraction; commercial and bank discount; taxes; insurance; interest and interest tables; square and cube root; measurement of surfaces and solids, including cones, cylinders and spheres; elements of the metric system; problems involving purchases by the ton and by the thousand, and problems in measurement and percentage.

This course does not include: addition, subtraction, multiplication and division of denominative numbers; tables of English money and troy and apothecaries' weight; surveyors' measures; averaging accounts; stock-jobbing; U. S. securities; gold investments; compound proportion; custom house business; partnership; duodecimals; arithmetical and geometrical progressions; alligation.

This course in arithmetic is designed to take the place of the commercial and senior-review courses offered formerly, and only one set of questions for arithmetic, done in the high school, is designed to be offered. It is believed that the teacher can give the subject the commercial or pedagogical viewpoint, as local conditions may require.

## SENIOR GRAMMAR

## ONE-HALF UNIT

The aims of senior grammar are similar to those of senior arithmetic, viz.: Comprehensive and intensive study of the subject for such a mastery as was impossible four years before, and also the phase of the subject needed by the prospective teacher in presenting it to his classes.

If the teacher is masterful and independent of any particular book, it would be profitable to spend the semester on work devised or chosen from various sources, and then, under the direction of the teacher have the pupils investigate the assigned lesson in various texts kept on the shelves or in those in their own possession. This would give rise to differences of view and, with a skillful teacher, to reconciliation later on. As in arithmetic, every topic of grammar should be investigated, but the fundamental principles should not be lost sight of in discussion over minor and merely *formal* details. Grammar should be built up, or developed as other sciences in accordance with inductive procedure—examining and classifying material as in chemistry or botany. It is a *thought* subject *par excellence*. The emphasis should, of course, be laid on the *sentence* analyzed into its various parts, and on the kinds and relations of these parts.

## COMMON SCHOOL SUBJECTS

The state high school board offers examinations in arithmetic; English grammar and composition; the history of the United States; geography; reading, spelling and penmanship. These examinations are designed for pupils who have completed the eight grades of the common school course and desire to enter the high school. The examinations in arithmetic; English grammar and composition; history, and geography will require no farther comment than that they will cover the work that is usually done in these subjects in the grammar grades. Reading, spelling and penmanship will be treated in a single paper in accordance with the following plan:

The examination in reading will be based upon a portion of the literature that is read in the grammar grades of our schools, namely, upon:

Whittier's *Snowbound*.

Burroughs' *Birds and Bees*.

Irving's Sketch Book: Rip Van Winkle, Westminster Abbey, The Voyage, Legend of Sleepy Hollow.

Holmes' Grandmother's Story of the Battle of Bunker Hill, How the Old Horse Won the Bet, A Ballad of the Boston Tea Party, The Last Leaf, Old Ironsides, The Living Temple, The Chambered Nautilus.

Longfellow's Evangeline and The Courtship of Miles Standish.

The pupil's scholarship mark in spelling will be determined from his answer paper in the subject of reading; provided that the examiner may supplement this test with a list of words selected for the purpose from the literature named above, but no rare or unusual words shall be included in such list.

This answer paper will also serve as a specimen of the pupil's penmanship and will determine his grade in that subject.

In addition to studying the subject matter of what is read for the purpose of getting the author's meaning, pupils should give careful attention to distinct pronunciation and a pleasing and effective oral expression of the thought. This should constitute an important feature of all school work in reading, but in the nature of the case it is impossible to give it proper recognition in a written examination. It is therefore suggested that the superintendent of the school supplement the high school board examination with an oral test that shall show the pupil's skill in the art of reading aloud.

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#### VIII. GENERAL REFERENCE,—

Webster. International Dictionary.

The Century Dictionary.

New International Encyclopedia.

Encyclopedia Americana.

The Loose-Leaf Nelson Encyclopedia.

Aiton's Encyclopedia.

Brewer. Reader's Handbook of Famous Names in Fiction.

Brewer. Dictionary of Phrase and Fable.

Imperial Atlas of the World.

Ringwalt. Briefs on Public Questions.

World Almanac.



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